

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE	PAGE OF PAGES 1   4
2. AMENDMENT/MODIFICATION NO. 000094	3. EFFECTIVE DATE 03/01/2012	4. REQUISITION/PURCHASE REQ. NO. See Schedule	5. PROJECT NO. (If applicable)
6. ISSUED BY NASA/Marshall Space Flight Center Procurement Office Marshall Space Flight Center AL 35812	CODE MSFC	7. ADMINISTERED BY (If other than Item 6) Kathy Christy Email: kathy.christy@nasa.gov Telephone: (256) 961-1538 Fax: (256) 544-5028	CODE MSFC
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) INFOPRO CORPORATION Attn: Larry Lawson 6705 ODYSSEY DR HUNTSVILLE AL 35806-2300		(x) 9A. AMENDMENT OF SOLICITATION NO.	
CODE 0AFL2 FACILITY CODE		9B. DATED (SEE ITEM 11)	
		X 10A. MODIFICATION OF CONTRACT/ORDER NO. NNM08AA20C	
		10B. DATED (SEE ITEM 13) 02/12/2008	
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>			

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended.  
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: \$2,944,075.00

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) Unilateral Mod: FAR 52.217-9 Opt to Extend the Term of the Contract & FAR 52.232-22 Limitation of Funds

E. IMPORTANT: Contractor  is not,  is required to sign this document and return \_\_\_\_\_ 0 \_\_\_\_\_ copies to the issuing office.

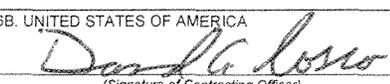
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The Negotiated Estimated Cost increases from (b)(4)  
The Provisional Estimated Cost remains unchanged at (b)(4)  
Award Fee Earned remains unchanged at \$3,843,763.  
The Potential Award Fee increases from \$(b)(4)  
The Total Fee increases from (b)(4)  
The Contract Value increases from \$120,655,762 by \$8,200,884 to \$128,856,646.  
Total Funding Allotted increases from \$114,066,964 by \$2,944,075 to \$117,011,039.

Page 2 for further description of modification.

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		David A Iosco	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)			FEB 21 2012
		(Signature of Contracting Officer)	

A. The purpose of this modification is to:

1. The contract Period of Performance (POP) is hereby extended from March 1, 2012 through February 28, 2013 for the final contract year Option Year 4 (OY4). The Contractor shall perform the work called for under Attachment J-1, Performance Work Statement, during the period of performance of this option.

Update Table B-1 "Total Value" to include CLIN 5, OY4 totals for Fee Periods 9 and 10. Total value for CLIN 5 is \$8,200,884 increasing the overall contract value from \$120,655,762 to \$128,856,646.

Clause B.3 "Indefinite Delivery/Indefinite Quantity", CLIN 5, specifies the maximum IDIQ quantity value for Option Year 4 is \$41,600,000. The contract value will be adjusted in subsequent modifications as Task Orders are executed.

2. Update clause B.5 "1852.232-81 Contract Funding" adding incrementally funding in the amount of \$2,944,075 increasing the Total Sum Allotted from \$114,066,964 to \$117,011,039. The contractor provided an estimated funded through date of May 4, 2012, in an email dated February 17, 2012.
3. Update Clause F.2, Period of Performance, to reflect the Period of Performance of March 1, 2008 through February 28, 2013 for Option Year 4.
4. Update Attachment J-1, Performance Work Statement (PWS), with the revised PWS for Mod 94, dated Feb 17, 2012. Changes to the PWS are indicated with right margin sidebars.
5. Update Attachment J-2, Data Procurement Document (DPD) Revision D to Revision F. Changes to Revision F are indicated with right margin sidebars and are follows:

Contract Mod. 0094	<p>Changed the title on DRD 1163MA-010 from "Monthly Calibration Services Reports" to "Monthly Metrology and Calibration Services Reports"</p> <p>Changed the title on DRD 1163MA-011 from "Monthly Valve Components Shop" to "Monthly Valve and Component Services Reports"</p> <p>1163MA-010, Updated Item 6, Item 7 and Item 15.1. Deleted 15.3a through j and added new contents 15.3a through i.</p> <p>1163MA-011, Updated Item 6, Item 7 and item 15.1. Deleted 15.3 a through c and added new contents 15.3a through j</p> <p>1163SA-003, Item 11: Added "The contractor monthly safety statistics shall be sent to the MSFC Industrial Safety Branch or the Primary SMAR identified in Contract <b>Attachment J-20 - NASA MSFC Safety and Mission Assurance (S&amp;MA) Surveillance Plan Responsibilities and Requirements, Part A - General NASA Contract Quality Management System Monitoring and Surveillance, paragraph 2a</b>".</p> <p>1163QE-001, Updated Item 15.2 Applicable Documents and Item 15.3 Contents</p> <p>1163QE-002, Updated Item 7 Description/Use and Item 15.1 Scope.</p>
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6. Administratively update Attachment J-6, "Schedule of IDIQ Fully Burdened (Except-Fee) Not-to-Exceed (NTE) Labor Rates for Prime & Major Subcontractors," to correct the page numbering.
7. Replace Attachment J-15, Wage Determination, pursuant to FAR Clause 52.222-41, Service Contract Act, incorporating Wage Determination No. 2005-2007 Revision No. 15 dated 06/13/2011.
8. Update Attachment J-20, "NASA MSFC Safety & Mission Assurance Surveillance Plan Responsibilities and Requirements." Changes are indicated with right margin sidebars.

B. A recapitulation of the contract value is as follows:

	Negotiated Estimated Cost (a)	Provisional Estimated Cost (b)	Award Fee Earned (c)	Potential Award Fee (d)	Total Fee (c+d)	Contract Value (a+b+c+d)	Total Funding Allotted
Previous	(b)(4)		\$3,843,763	(b)(4)		\$120,655,762	\$114,066,964
This Mod			\$0			\$8,200,884	\$2,944,075
Revised Total			\$3,843,763			\$128,856,646	\$117,011,039

C. Purchase Request No./Accounting & Appropriation Data:

CMM Item #	WBS	Amount	PR
1	62ET40/6100.2511/62/FC000000/432938.09.01.08.12.0/6/000/2510/62/CASX12012D/361N/1/2	\$40,000	4200423320 Item# 001
2	62ET60/6100.2511/62/FC000000/432938.08.01.08.09.0/1/000/2510/62/CASX12012D/361N/1/43	\$60,000	4200423320 Item# 002
3	62ZP11/6100.2511/62/FC000000/378289.04.02.13/000/2510/62/SCX22012D/359A/1/2	\$2,398	4200423320 Item# 003
4	62AS20/6100.2511/62/FC000000/736466.06.08.08.04/000/2510/62/CASX12012D/361N/1/2	\$8,988	4200424851 Item# 001
5	62ZP22/6100.2511/62/FC000000/411672.06.04.01/000/2510/62/SCX22012D/913K/2/3	\$6,247	4200424851 Item# 001
6	62ER23/6100.2511/62/FC000000/432938.08.01.08.09.0/3/000/2510/62/CASX12012D/361N/3/4	\$3,055	4200424851 Item# 001
7	62ET10/6100.2511/62/FC000000/585777.08.10.33/000/2510/62/EXPX22012D/719V/4/5	\$250,000	4200424851 Item# 001
8	62ET02/6100.2511/62/FC000000/736466.01.08.08.01/000/2510/62/CASX12012D/361N/1/2	\$5,500	4200424851 Item# 002
9	62ER33/6100.2511/62/FC000000/585777.08.10.33/000/2510/62/EXPX22012D/719V/2/3	\$5,575	4200424851 Item# 002
10	62EV33/6100.2511/62/FC000000/585777.02.40.04.13.1/0/000/2510/62/EXPX22012D/719V/2/3	\$6,500	4200424851 Item# 003
11	62ES23/6100.2511/62/FC000000/585777.08.30.01.62.0/1/000/2510/62/EXPX22012D/719V/3/4	\$242,296	4200424851 Item# 003
12	62ES23/6100.2511/62/FC000000/432938.11.01.08.42/000/2510/62/CASX12012D/361N/4/81	\$74,271	4200424851 Item# 003
13	62ES23/6100.2511/62/FC000000/401769.06.08.02.04.0/5/000/2510/62/EXCX22012D/733B/5/82	\$692,911	4200424851 Item# 003
14	62ES23/6100.2511/62/FC000000/401769.06.03.03.02.0/7/000/2510/62/EXCX22012D/733B/6/83	\$3,784	4200424851 Item# 003
15	62ES23/6100.2511/62/FC000000/585777.08.10.33/000/2510/62/EXPX22012D/719V/7/84	\$17,452	4200424851 Item# 003
16	62ES23/6100.2511/62/FC000000/304029.01.04.02.08/000/2510/62/SCX22012D/359A/1/2	\$3,200	4200424851 Item# 003
17	62ES61/6100.2511/62/FC000000/401769.06.08.02.04.0/5/000/2510/62/EXCX22012D/733B/1/2	\$25,000	4200424851 Item# 004
18	62ER22/6100.2511/62/FC000000/585777.08.20.10.48.0/4/000/2510/62/EXPX22012D/719V/1/2	\$90,000	4200424851 Item# 005
19	62ES23/6100.2511/62/FC000000/432938.11.01.08.42/000/2510/62/CASX12012D/361N/1/120	\$130,000	4200424851 Item# 006
20	62ES23/6100.2511/62/FC000000/401769.06.08.02.04.0/5/000/2510/62/EXCX22012D/733B/1/2	\$712,333	4200424851 Item# 007
21	62ES23/6100.2511/62/FC000000/401769.06.03.03.02.0/7/000/2510/62/EXCX22012D/733B/2/3	\$23,070	4200424851 Item# 007
22	62ZP12/6100.2511/62/FC000000/399131.02.01.02.15/000/2510/62/SCX22011D/719A/3/235	\$6,073	4200424851 Item# 007
23	62ET30/6100.2511/62/FC000000/869021.04.08.01.13.0/4/000/2510/62/CASX12012D/512F/4/236	\$44,496	4200424851 Item# 007
24	62ES43/6100.2511/62/FC000000/432938.11.01.08.42/000/2510/62/CASX12012D/361N/5/237	\$57,900	4200424851 Item# 007
25	62ET02/6100.2511/62/FC000000/585777.08.10.33/000/2510/62/EXPX22012D/719V/1/2	\$140,000	4200424851 Item# 008
26	62ET02/6100.2511/62/FC000000/585777.08.10.33/000/2510/62/EXPX22012D/719V/1/43	\$200,000	4200424851 Item# 009
27	62EM40/6100.2511/62/FC000000/921179.01.08.11.E470/.12/000/2510/62/CASX12012R/CASP/1/2	\$1,500	4200424851 Item# 010
28	62EM40/6100.2511/62/FC000000/921179.01.08.11.EM67/.12/000/2510/62/CASX12012R/CASP/2/3	\$2,218	4200424851 Item# 010
29	62EM40/6100.2511/62/FC000000/921179.01.08.17.E452/.12/000/2510/62/CASX12012R/CASP/3/4	\$2,973	4200424851 Item# 010
30	62EM40/6100.2511/62/FC000000/921179.01.08.15.E463/.12/000/2510/62/CASX12012R/CASP/4/5	\$8,057	4200424851 Item# 010
31	62EM40/6100.2511/62/FC000000/921179.01.08.E1.ET56/.12/000/2510/62/CASX12012R/CASP/5/6	\$9,750	4200424851 Item# 010
32	62EM10/6100.2511/62/FC000000/943396.05.03.02.08.0/2/000/2510/62/SCX22012D/431A/1/2	\$1,620	4200424851 Item# 011
33	62EM50/6100.2511/62/FC000000/799362.01.07.01/000/2510/62/SPTX22012D/277J/1/2	\$20,000	4200424851 Item# 012
34	62EM50/6100.2511/62/FC000000/921179.01.08.11.E572/.12/000/2510/62/CASX12012R/CASP/1/2	\$30,000	4200424851 Item# 013
35	62EM10/6100.2511/62/FC000000/921179.01.08.17.EM67/.12/000/2510/62/CASX12012R/CASP/1/2	\$10,000	4200424851 Item# 014
36	62ET20/6100.2511/62/FC000000/921179.01.08.11.ET4A/.12/000/2510/62/CASX12012R/CASP/1/2	\$6,908	4200424851 Item# 015
<b>Total</b>		<b>\$2,944,075</b>	

- D. The following pages/sections are deleted in their entirety and the attached revised pages/sections are substituted in lieu thereof:

	<u>Pages Deleted/Updated</u>	<u>Sections Added/Revised</u>
Section B	B-2 (Mod 91)	B-2 (Mod 94)
Section B	B-4 (Mod 93)	B-4 (Mod 94)
Section F	F-1 (Mod 72)	F-1 (Mod 94)
Attachment J-1	J-1 (Mod 82)	J-1 (Mod 94)
Attachment J-2	J-2 (Mod 72)	J-2 (Mod 94)
Attachment J-6	J-6 (Mod 72)	J-6 (Mod 94)
Attachment J-15	J-15-1 through J-15-10 (Mod 72)	J-15-1 through J-15-10 (Mod 94)
Attachment J-20	J-20-1 through J-20-7 (Mod )	J-20-1 through J-20-7 (Mod 94 )

- E. All other terms and conditions remain unchanged and in full force and effect.



(d) After 85 percent of the potential award fee has been paid, the Contracting Officer may direct the withholding of further payment of award fee until a reserve is set aside in an amount that the Contracting Officer considers necessary to protect the Government's interest. This reserve shall not exceed 15 percent of the total potential award fee.

(e) The amount of award fee which can be awarded in each evaluation period is limited to the amounts set forth in Clause B.2, Estimated Cost and Award Fee. Award fee which is not earned in an evaluation period cannot be reallocated to future evaluation periods.

(f) (1) Provisional award fee payments will be made under this contract pending the determination of the amount of fee earned for an evaluation period. Provisional award fee payments will be made to the Contractor on a monthly basis. The total amount of award fee available in an evaluation period that will be provisionally paid is the lesser of 70 percent or the prior period's evaluation score.

(2) Provisional award fee payments will be superseded by the final award fee evaluation for that period. If provisional payments exceed the final evaluation score, the Contractor will either credit the next payment voucher for the amount of such overpayment or refund the difference to the Government, as directed by the Contracting Officer.

(3) If the Contracting Officer determines that the Contractor will not achieve a level of performance commensurate with the provisional rate, payment of provisional award fee will be discontinued or reduced in such amounts as the Contracting Officer deems appropriate. The Contracting Officer will notify the Contractor in writing if it is determined that such discontinuance or reduction is appropriate.

(4) Provisional award fee payments will be made prior to the first award fee determination by the Government.

(g) Award fee determinations are unilateral decisions made solely at the discretion of the Government.

(End of Clause)

**B.5 1852.232-81 CONTRACT FUNDING (JUN 1990)**

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Funds clause, the total amount allotted by the Government to this contract is \$ 112,588,802. This allotment is for the Marshall Engineering Technicians and Trades Support Services and covers the following estimated period of performance: contract effective date through May 4, 2012.

(b) An additional amount of \$4,422,957 is obligated under this contract for payment of fee.

	Previous	This Action	Total
Estimated Cost:	(b)(4)		
Provisional Award Fee:	(b)(4)		
Earned Award Fee:	\$3,843,762	\$0	\$3,843,762
Total Sum Allotted:	\$114,066,964	\$2,944,075	\$117,011,039

(End of Clause)

## SECTION F - DELIVERIES OR PERFORMANCE

### F.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE

#### I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

<u>Clause Number</u>	<u>Title</u>	<u>Date</u>
52.242-15	Stop-Work Order (Alternate I)	APR 1984
52.247-34	FOB Destination	NOV 1991

#### II. NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

<u>Clause Number</u>	<u>Title</u>	<u>Date</u>
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None included by reference.

(End of Clause)

### F.2 PERIOD OF PERFORMANCE

(a) The period of performance of this contract shall be March 1, 2008 through February 28, 2013. If applicable, the contract phase-in period shall be from February 11, 2008 through no later than February 29, 2008.

(b) In the event the Government elects to exercise its option(s) pursuant to the terms of this contract, the period of performance for each option shall be as set forth below:

<u>Contract Periods</u>	<u>Period of Performance</u>
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All periods fully exercised as of March 1, 2012

### F.3 MSFC 52.237-91 PLACE OF PERFORMANCE (FEB 2001)

The Contractor shall perform the work under this contract at George C. Marshall Space Flight Center, and at such other locations as may be approved in writing by the Contracting Officer.

(End of Clause)

### F.4 52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor prior to the expiration of the current period of performance provided that the Government shall give the Contractor a preliminary written notice of its intent to extend at least 30 days before the contract expires. The preliminary notice does not commit to the Government to an extension.

## **ATTACHMENT J-1**

### **Performance Work Statement (PWS)**

#### **Introduction**

This Performance Work Statement (PWS) broadly defines the requirements for Marshall Engineering Technicians and Trades Support (METTS) Services provided to the Marshall Space Flight Center (MSFC) by the Contractor. These services cover a wide range of engineering technicians and other trade skills to perform testing; ground and space based research; test operations; data analysis; machine and electrical shop operations; and other technical activities. This contract will include professionals to oversee and manage the work performed by the technical staff.

The Contractor's work on these activities is controlled by means of a Mission Services portion for work that the Government intends to remain on the contract for its duration, and by an IDIQ portion implemented through the issuance of Task Orders (TOs) for work that the Government cannot adequately define. The Mission Services contract and TOs require the Contractor to coordinate with the MSFC Directorates/Offices that exercise MSFC responsibility for the activities. MSFC Directorates and Offices are responsible for the technical excellence of MSFC managed projects, MSFC in-house projects, and technology development and application initiatives. MSFC Civil Service personnel are also deployed in support of these projects and frequent coordination between Contractor personnel and Civil Service personnel is likely. This PWS is constructed in accordance with the Level 3 Work Breakdown Structure (WBS) provided in Attachment J-3.

A Contracting Officer's Technical Representative (COTR) will be appointed for technical oversight and direction on this contract. Due to the size and complexity of this contract, Technical Monitors (TM) will also be appointed to assist the COTR in the day-to-day functions of the major areas of the contract (the Government anticipates approximately 4 civil service Technical Monitors to cover section 2.0). In addition, each IDIQ order will have a Technical Monitor appointed. This may be an existing TM or a new TM depending on the nature of the order. The TM duties will include overseeing the technical work of the Contractor in their respective work areas, ensuring that the COTR is informed of problems, and advising the COTR with respect to Contractor performance.

#### **Scope**

The Contractor shall provide all the necessary management and personnel required to perform the technical and business tasks broadly defined by the Mission Services contract and TOs issued by the Government in accordance with Clause H.4 and H.5 of this solicitation. Responses to any Task Order Requests will be in the form of a Task Order Plan (TOP). The TOPs shall be provided in accordance with Data Requirements Description (DRD) 1163MA-002, Task Order Plan. A graphical depiction of the Task Flow Process can be found in Attachment J-4. With the exception of the property listed in Clause G.6 and Attachment J-9, the Contractor shall procure all materials, supplies, incidental services, tools, and equipment necessary for the accomplishment of this PWS. Any equipment purchases must be coordinated with the COTR, Technical Monitors, and Contracting Officer and shall not include any equipment \$1M in value or higher. The Contractor shall only be enabled to purchase equipment to meet the requirements of this contract. The Contractor shall comply with NASA/MSFC regulations, policies, directives, procedures, and standards when performing all work under this PWS.

## 1.0 Management

**1.1 Contract Management.** The Contractor shall provide the planning, coordination, technical direction, and surveillance of the activities necessary to ensure disciplined performance of work and timely and efficient application of resources for the accomplishment of all Mission Services contract work and TOs issued under the contract. The Contractor shall be responsible for maintaining communication with each supported organization and alerting the Contracting Officer's Technical Representative (COTR) and Contracting Officer (CO) immediately of any problems that would prevent meeting established objectives. A Management Plan shall be provided in accordance with DRD 1163MA-001 Management Plan.

The Contractor shall provide an Organizational Conflict of Interest (OCI) Avoidance Plan in accordance with DRD 1163MA-009.

1.1.1 Task Management - The Contractor shall provide planning, coordination, and surveillance of overall project activities to ensure disciplined performance of work and the timely and efficient application of resources necessary for the completion of all tasks of this PWS. The Contractor shall make adjustments in the application of resources to specific WBS elements, as demands and priorities require, in consultation with the COTR. The Contractor shall develop a TOP for Task Order Requests received from the Government in accordance with DRD 1163MA-002, Task Order Plan. The Contractor shall commence work once the TOP has been issued as a Task Order by the Contracting Officer.

The Contractor shall plan and conduct an informal progress review (format to be agreed upon between Contractor and COTR) scheduled as coordinated with COTR. All work being accomplished shall be addressed, by WBS element and/or Task Order, in these progress reports.

The Contractor shall employ contract-wide, work tracking system, MIMS (METTS Information Management System), that will be used to monitor and forecast work and will accept exports of all currently used electronic data systems (specifically PWS 2.4). In addition, the Contractor will use MIMS for travel, training and procurement requests, interfacing with Deltek to ensure funding levels are approved prior to granting the requests. MIMS will enable the ability to integrate work management across all PWS areas and will allow the Offeror to reduce the probability of cost overruns for travel, training and procurement.

1.1.2 Contractor Employee Center-wide Training and Certifications – MSFC requires certification for certain center-wide job functions (e.g., crane operator, fork truck operator, etc.; reference MWI 3410.1, "Personnel Certification Program"). For these job functions, the Contractor shall ensure that their workforce is properly certified to the MSFC standards prior to conducting any work requiring these job functions.

When performing work or operating equipment in direct support of NASA MSFC, within the Contractor's quality management system, including requirements for Industrial Safety (See DRD 1163SA-001), the Contractor shall establish, implement, and maintain a training and certification program as required to accomplish the requirements of this PWS, reference DRD 1163QE-001. Monitoring of these training, qualification, and certification processes will be as specified in J-20, NASA MSFC Safety & Mission Assurance Surveillance Plan.

The Contractor shall keep its employees trained and certified in order to properly perform tasks requiring certification. The Contractor shall ensure all employee certifications are recorded in the MSFC CERTRAK database. Training methods include formal training and on-the-job training in order to maintain all employee levels of technical competence. Any Contractor employee authorized to operate a given test instrument or piece of equipment shall be trained on

the current operating techniques of the equipment. Any Contractor request for unique training related to the specific job functions shall be approved by the COTR. Training costs approved by the COTR shall be charged to the WBS element to which it specifically supports.

The Contractor shall provide a comprehensive plan describing how they will manage all certification requirements on this contract. The certification plan shall be provided in accordance with DRD 1163SA-002, Personnel Certification Plan.

The Contractor shall prepare and submit an Employee Cross-training Report in accordance with DRD 1163MA-017.

1.1.3 Contractor Employee Specialized Training and Unique Certifications – In direct support of facility unique MSFC operations under MSFC processes (facility unique OWIs, SOPs, etc.), the Contractor shall obtain specialized training and facility unique certification in all areas where required for performing a WBS element, or as directed by the COTR. The Contractor employees shall perform work in areas where certification is required only after certification is obtained, or under the supervision of an employee who has obtained certification. For unique technical capabilities where a certification program does not exist, the Contractor shall develop a certification program, to be listed in and tracked the METTS Qualification System. All employees working in areas requiring unique certifications shall be certified and listed in the CERTRAK database within 180 days of contract award. The Contractor shall maintain all required certifications throughout the contract. As examples, within 90 days of contract award, the Contractor shall develop certification plans which will encompass certification requirements for operation of all vacuum, thermal vacuum and turbine technology, pressure systems, and instrumentation and data collection.

For facility unique operations requiring certification, the Contractor shall designate employee(s) who will serve as certification granting authorities for their specific areas of expertise. These employee(s) shall be technically competent in the areas for which they serve as the certification granting authority and approved by the COTR.

The Contractor shall address specialized and unique certifications in their comprehensive certification plan. The certification plan shall be provided in accordance with DRD 1163SA-002, Personnel Certification Plan.

1.1.4 Monthly Cost and Status Reports - The Contractor shall support a formal monthly status meeting and provide a Monthly Cost and Status Report broken out by WBS element and/or Task Order, in accordance with DRD 1163MA-004, Monthly Cost and Status Report. The Monthly Cost and Status Report shall include accomplishments during the month, work upcoming for the next month, problems encountered during the reporting month, new discoveries and/or inventions. In addition, the report shall include summaries of training, travel, overtime, consulting, procurements, and commercial work. This Monthly Cost and Status Report shall be provided to the COTR on, or before, the 10th day of each month and will cover the previous month's status. The Monthly Cost and Status Report shall not exceed two pages for each WBS element. The Contractor shall produce minutes for each of the meetings and these minutes shall include copies of all presentation charts, if applicable, and shall provide special cost analyses and projection reports, as required. Minutes shall be provided to the COTR within 5 days of meeting date.

1.1.5 Contractor Employee Clearance Document - For Contractor badged employees who no longer require access to MSFC, the Contractor shall provide verification these employees have properly cleared all accounts when the access is no longer needed. The Contractor shall establish and maintain the document in accordance with DRD 1163MA-006, Contractor Employee Clearance Document.

1.1.6 Position Risk Designation for Non-NASA Employee - The position risk designation for non-NASA employees provides information necessary to determine the type of investigation required and how closely an individual is screened for a position. The Contractor shall provide the required information in accordance with DRD1163MA-007, Position Risk Designation for Non-NASA Employee.

1.1.7 Quality Systems Management - The Contractor's quality system shall be compliant to SAE AS9100 (excluding Section 7.3 "Design and Development") by transitioning from the existing quality management system within 120 days after the contract award date. The Contractor shall be verified as compliant by a MSFC audit of their quality management system to the requirements of MWI 5330.1. The Contractor shall detail their quality management system in a quality plan prepared in accordance with DRD 1163QE-001, Quality Management System Plan. The Contractor's quality management system shall be sufficiently broad in scope and cover all aspects of the technical support, testing support, and fabrication/assembly requirements of this PWS.

NASA MSFC shall approve all quality controlled special processes prior to those processes being performed to provide products to NASA and/or any other customer. Processes previously approved will be considered acceptable for use and shall be reviewed again after those documented processes have been transitioned into the Contractor quality management system format. Transition time periods for process re-approval shall be provided by NASA through the COTR.

## **1.2 Planning and Control**

1.2.1 Work Management - The Contractor shall provide surveillance and management oversight to meet the operations of each WBS element. Each WBS element consists of diverse technical activities with unique work skills. Most WBS elements have different planning, implementing, and progress tracking systems that maintain work flow in specific work areas. The systems or processes may be manual, electronic, or both and may consist of meetings daily, weekly, or monthly.

The Contractor shall coordinate, report, and ensure the timely completion of the work specified. This encompasses the planning, coordination, technical direction, and surveillance of all activities necessary to execute all work.

- a) The Contractor shall provide the overall management effort required to integrate technical and programmatic functions.
- b) The Contractor shall ensure the technical excellence, cost effectiveness, and timeliness of all required work and deliverable products.
- c) The Contractor shall evaluate new or used equipment to assure compatibility with directed tasks. This shall include travel to Government depots or to equipment manufacturers' or distributors' plants, as required.
- d) The Contractor shall prepare and submit a Data Handling Plan in accordance with DRD 1163CD-003.
- e) The Contractor shall prepare and submit a Test Chronology Report in accordance with DRD 1163MA-012.
- f) The Contractor shall prepare and submit a Monthly Workforce Reports in accordance with DRD 1163MA-013.
- g) The Contractor shall prepare and submit a Propellants and Pressurants (P&P) Management Plan in accordance with DRD 1163MA-014.

- h) The Contractor shall prepare and submit a Propellants and Pressurants (P&P) Forecast and Logistic Reports in accordance with DRD 1163MA-015.
- i) The Contractor shall prepare and submit a Test Area Support Reports in accordance with DRD 1163MA-016.
- j) The Contractor shall prepare and submit a Maintenance Plan in accordance with DRD 1163MA-018.

1.2.2 Property Management - The Contractor shall establish and maintain a report in accordance with DRD 1163LS-001, Government Property Management Plan for all equipment, tools, etc., provided by the Government for use by the Contractor in the performance of contracted effort, and for which the Contractor has been given physical custody.

1.2.3 Technology Reports - The Contractor shall provide technical information concerning any invention, discovery, improvement, or innovation made by the Contractor in the performance of work under this contract. Technology reports shall be prepared in accordance with DRD 1163CD-002, Technology Reports.

1.2.4 Security and Information Technology - The Contractor shall incorporate appropriate safeguards to ensure the availability, integrity, and confidentiality of information and information technology resources utilized in support of this contract. Safeguards shall be commensurate with the sensitivity or criticality of the resources and shall be sufficient to minimize the risk to NASA's mission and credibility.

1.2.5 Contractor Employee Travel - The Government will reimburse the Contractor for any necessary travel expenses, in accordance with the Federal Travel Regulations. The Government shall not be charged with travel expenses, unless the travel is coordinated and concurred, in writing, by the COTR prior to the beginning of the travel. Travel costs shall be charged to the WBS to which it specifically supports.

1.2.6 Contractor Employee Overtime - The Contractor shall work a five-day work week and define their work schedule within Marshall's normal work hours (6:30 AM through 5:30 PM) unless an alternate work schedule has been approved by the COTR.

Notwithstanding Clause B6, "Premiums for Scheduled Overtime," overtime for employees under WBS elements 1.0, 2.0, and 3.0 shall be coordinated with the COTR, and receive concurrence from the COTR, prior to the commencement of any overtime work. Overtime costs shall be charged to the WBS to which it specifically supports.

1.2.7 Badged Employee and Remote IT User Listing - The Contractor shall establish and maintain a report listing of all Contractor personnel working onsite at MSFC in accordance with DRD 1163MA-005, Badged Employee and Remote IT User Listing.

1.2.8 Commercial Work - Upon written permission by the Contracting Officer, the Contractor may use the facilities provided under this contract for a rental fee for commercial work.

When requesting permission to use the facilities, the Contractor shall provide the following information with its request:

- 1). Description of the work to be accomplished.
- 2). Estimated man hours.
- 3). Period of Performance.
- 4). Name of the customer.
- 5). Amount the customer is paying the Contractor.

If granted, approval to use the Government facilities will be provided on a non-interference basis with other Government work. Authorizing such use of the facilities does not waive any rights of the Government to terminate the Contractor's right to use the facilities.

The Contractor shall indemnify the Government and hold it harmless against claims for injury to persons or damage to property of the Contractor or others arising from the Contractor's possession or use of the facilities. A copy of the indemnification notice shall be included in each subcontract issued by the Contractor. The Contractor is fully liable for all damages to Government property being used for commercial purposes.

Rental rates for the facilities shall be 10 percent of each individual commercial contract. However, the Contractor may use, with the written approval of the COTR, the rates set forth in FAR 52.245-9, "Use and Charges" if the Contractor determines 10 percent to be inequitable. The Contractor shall credit future payment vouchers for rental costs incurred.

**1.2.9 Contractor Procurements** – Per NFS 1852.245-71, all items procured under this contract are accountable to the Government and the contractor assumes user responsibilities. The contractor shall establish a record of property procured using contract funds and transfer to the Government within 5 working days after receipt of the property. The contractor will use DD1149 (or equivalent) along with the contractor's Purchase Order (PO) and provide to the installation central receiving area prior to delivery by the vendor. The contractor will be accountable and liable for the property until it is transferred to the Government's accountability (Reference MWI 4200.1, "Equipment Control" and NFS 1852.245-71).

**1.2.9.1 Operations** - The Contractor shall procure general operating supplies, materials, tools and equipment necessary for the accomplishment of this PWS. Any equipment purchases must be coordinated with the COTR, Technical Monitors, and Contracting Officer and shall not include any equipment \$1M in value or higher. Procurement costs shall be charged to the WBS element to which it specifically supports.

**1.2.9.1.1 Secondary Operations, Fee Bearing** – Operations materials that are within scope of the contract but do not meet the intent of the definitions spelled out in WBS 1.2.9.1 Operations, 1.2.9.2 Direct, and Attachment J-6-3. All "Secondary Operations, Fee Bearing" purchases shall be identified on a case per case basis, and approved by the CO, **prior** to the material purchase. The Contractor shall submit a written request to the CO seeking approval of the material purchase, subject to a 3% fee. Fee on "Secondary Operations, Fee Bearing" purchases shall be included in the negotiated fee pool. If the contractor does not submit a written request to the CO for a "Secondary Operations, Fee Bearing" purchase determination prior to the purchase, the purchase shall be categorized as "Operations" and be non-fee bearing.

**1.2.9.2 Direct** - The Contractor shall procure direct materials (e.g. aluminum, titanium, stainless and carbon steels, etc) and incidental services (e.g. necessary for completion of fabrication shop customer orders) as necessary to accomplish requirements of this PWS.

**1.3 Safety, Health and Environmental.** The contractor shall establish and implement an industrial safety, occupational health, and environmental program that (1) prevent employee fatalities, (2) reduce the number of incidents, (3) reduce the severity of employee injuries and illnesses, and (4) protects the environment through the ongoing planning, implementation,

integration and management control of these programs in accordance with DRD 1163SA-001. The SHE Plan shall address each of the following MSFC SHE core program requirements in detail that are applicable to the contracted effort and include a matrix that identifies where each requirement is addressed:

- a. CPR 1 - Management Leadership and Employee Involvement.
- b. CPR 2 - Worksite Analysis.
- c. CPR 3 - Hazard Prevention and Control.
- d. CPR 4 - Safety, Health and Environmental Training.
- e. CPR 5 - Environmental Compliance.

The Contractor shall report mishaps and safety statistics to the MSFC Industrial Safety Branch in accordance with DRD 1163SA-003. The contractor shall submit directly into the NASA Incident Reporting Information System (IRIS) or shall use the forms listed in section 15.4 of DRD 1163SA-003 or electronic equivalent to report mishaps and related information required to produce the safety metrics.

The Contractor shall follow all MSFC safety, health, and environmental regulations. Contractor personnel will engage in hazardous operations including, but not limited to, hazardous waste generation, oxygen deficiency, high voltage, confined space entry, machine shop operations, overhead crane operations, forklift operations, aerial lift operations, cryogen handling, high pressure and cryogenic systems, vertical and boom aerial lift operations, high amplitude noise exposure, and high rpm rotating objects. The Contractor shall produce, and keep current, a Job Hazard Analysis for each employee. The Contractor shall also be responsible for maintaining the data associated with each hazardous operation in MSFC's Inventory of Hazardous Operations (IHOPS) database. This requires evaluation and update of this database annually as a minimum.

In addition, the Contractor shall perform a monthly inventory to ensure all chemicals have Material Safety Data Sheets (MSDS) and are properly bar coded, inventoried, and stored per MSFC Center (MWI 8550.5) and ISO14001, or latest version, guidelines. The Contractor, as requested, shall provide an oral report at NASA team safety meetings verifying that an inventory has been completed, all MSDS notebooks have been updated, and all chemicals are properly bar coded, inventoried, and stored per MSFC Center (MWI 8550.5) and ISO14001, or latest version guidelines.

All Contractor personnel shall attend an established monthly safety meeting and document their attendance. The Contractor shall document the safety meeting attendance of employees in MSFC's Supervisor's Safety Webpage (SSWP). In addition, all Contractor supervisory personnel shall conduct a monthly safety walk through of areas under their responsibility, report their findings in SSWP, and close findings within 30 days.

The Contractor shall prepare and submit an Air Emissions Reports in accordance with DRD 1163SA-004.

**1.4 Financial Reporting.** The Contractor shall utilize a financial reporting system in accordance with the NFS 1852.242-73, *NASA Contractor Financial Management Reporting* and NASA Policy Guide (NPG) 9501.2C, *NASA Contractor Financial Management Reporting*. The Contractor shall submit financial management reports in accordance with DRD 1163MA-003, Financial Management Report (533M). The 533 will be reported at the Task and WBS Level(s).

This report shall summarize standard labor hours and costs, overtime labor hours and costs, Other Direct Cost (ODC) incurred, travel, training, procurements (including materials), and

commercial work for each WBS by NASA Project funding code, or reporting category, as directed by the COTR.

## **2.0 Mission Services Technicians and Trades Support**

### **2.1 Reserved**

### **2.2 Reserved**

### **2.3 Reserved**

**2.4 Fabrication and Assembly of Research & Development Space Flight and Associated Hardware.** The Contractor shall perform fabrication and assembly of R&D products that are within MSFC's manufacturing capability. The manufacturing capability is defined as R&D hardware products and manufacturing processes for MSFC in-house designs that require close and continual collaboration with design personnel, development of manufacturing processes, or are schedule critical.

The Contractor shall perform tasks that will consist of manufacturing R&D space flight hardware and experiments, flight ground support hardware and equipment, test fixtures (dynamic, thermal vacuum, and structural), and prototype/mockup hardware or end items made from various materials. The tasks may also require refurbishment (re-machining, reprocessing, and/or cleaning) of existing hardware.

MSFC is transitioning to Digital Design to Fabrication (DDTF). The Contractor shall have knowledge of DDTF, which includes the ability to accept and read CAD models from a variety of CAD/Modeling systems housed in a common Product Data Management (PDM) configuration system, and understand the datum to cost and plan. The Contractor shall have expertise in geometric dimensions and tolerances (GD&T). The Contractor shall provide a skill mix that includes both traditional and DDTF cost estimating and planning to meet the technical requirements of this contract.

The Contractor shall establish, implement, and maintain a system for reporting performance in accordance with DRD 1163MA-007, Monthly and Semi-Annually Performance Reports.

**2.4.1 Precision and General Assembly** - The Contractor shall perform precision and general assembly in the open shop and in environmentally controlled clean rooms on both flight experiment hardware and test hardware. Some assembly operations require adhesive bonding technology.

**2.4.2 Machining** - The Contractor shall perform machining processes which shall consist of, but not be limited to, operations performed on lathes, mills, grinders, shapers, and electrostatic discharge machines. Selected machines are computer numerically controlled (CNC) and can be programmed both off- and on-line. Machining and grinding operations frequently require dimensional control to less than .001 inch. Foam machining shall include operation of conventional or CNC equipment in the foam shop or controlled areas of the primary machine shop. As a minimum, the Contractor shall be capable of operating a four machining centers at one time and ensure the machining centers are manned while operating.

**2.4.3 Sheet Metal** - The Contractor shall perform sheet metal processes which shall consist of, but not be limited to, operations requiring shearing, bending, punching, and fastening. The Contractor shall fabricate high and low-pressure metal tubing and flexible hose systems.

2.4.4 Surface Treatment - The Contractor shall perform surface treatment operations which shall involve, but not be limited to, glass bead/sandblasting operations, acid and alkaline metal etching, painting (spray and brush), chemical passivation, and chemical phosphate metal treatment. Electrochemical metal processing shall involve, but not be limited to, anodizing and electroless nickel plating processes. Various other plating processes may be required but only at the direction of the Technical Monitor. Cleaning processes are conducted using special chemicals. Some precision cleaning processes require particulate and nonvolatile residue sample preparation. The Contractor shall be responsible for emptying containers of spent chemical into Government-furnished receptacles or into neutralization processing tanks. The Government shall be responsible for all disposal activity including waste/waste water permits. As a minimum, the Contractor shall have the capability to provide minimal services of surface treat, precision cleaning and painting at one time.

Dry-film lubrication application shall consist of all the functions necessary to pre-treat material and apply and burnish various solid (dry film) and liquid lubricants. These lubricants shall include, but not be limited to, un-bonded solids (granular or powdered) and resin-bonded solids.

2.4.5 Welding and Heat Treatment - The Contractor shall perform fusion welding operations which shall consist of, but not be limited to, metallic inert gas, tungsten inert gas, electron beam, and plasma arc and resistance and electrostatic discharge processes. Brazing processes shall consist of, but not be limited to, acetylene and vacuum oven techniques. The Contractor shall conduct heat treatment operations in electric and gas heated ovens and furnaces using controlled (vacuum and special gases) and non-controlled environments.

2.4.6 Fabric Shop - The Contractor shall provide, on a very limited basis, services that include a fabric shop. Fabric shop tasks primarily consist of, but are not limited to, fabrication of banners, curtains, safety harnesses, lifting slings, and multi-layer insulation (MLI) blankets. The Contractor shall lay-up, sew, ultrasonically weld, bond, and inspect as specified on the Customer Order. Some special items require fabrication in a clean room environment.

2.4.7 Maintenance - The Contractor shall provide mechanical and electrical/electronic maintenance to maintain shop equipment furnished by the Government. This shall include, but not be limited to, mechanical controls in the machine shop, sheet metal shop, heat treatment area, surface treatment area, precision cleaning area, and welding shop. The Contractor shall provide machine coolant servicing to consist of, but not limited to, replenishing, replacing, and reclaiming the machine coolants as required in the fabrication shops. Excessing, repair and/or replacement of equipment shall be approved by the Technical Monitor.

2.4.8 Calibration - The Contractor shall control measurement processes to ensure the accuracy of measurement results affecting safety and mission success for measurement and test equipment (MTE) in accordance with NPD 8730.1 and MPR 8730.5. On-Center Government metrology and calibration services are available for use as needed. The Contractor may utilize Government approved outsource calibration services as approved by the COTR. The Office of Record for all MSFC MTE calibration records shall be the on-Center MSFC Metrology and Calibration Laboratory and the Government owned MSFC Metrology and Calibration Database (NPR 1441.1, NASA Records Retention Schedules and MPR 8730.5).

2.4.9 Chemical Analysis - The Contractor shall perform sample collection, analysis, and reporting as described below:

- a) Monitor by chemical analysis all chemical tanks and rinse tanks in buildings 4760 and 4705 used in various plating, degreasing, etching, cleaning, and dye processes. These tanks shall be strictly monitored to assure that chemical parameters adhere to the requirements.
- b) The Contractor shall analyze the various solvents/fluids used in the precision cleaning facility in building 4705 for non-volatile residue and particle count to certify cleanliness of the aerospace hardware.
- c) The Contractor shall evaluate JP-8 fuel according to Military Specification, MIL-T-83133, Turbine Fuels, Aviation, Kerosene Types, NATO Code Numbers F-34 (JP-8) and F-35. The Contractor shall inspect for the presence of algae according to a demonstrably reliable method selected by the Contractor.
- d) The Contractor shall analyze hydraulic oil per MIL-PRF-83282, Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft Metric, NATO Code Number H-537, moisture per Karl Fischer method or equal, and for particulate.
- e) The Contractor shall ultrasonically clean liquid oxygen filters, run Nonvolatile residue (NVR) and particulate count, and report results prior to normal precision cleaning.

#### 2.4.10 Quality Control -

- a) The Contractor's quality department shall provide layout, in-process, and final inspection to ensure that all requirements are met.
- b) The Contractor's quality department shall prepare an Acceptance Data Package (ADP) for each Deliverable End Item (DEI) products. The ADP shall provide the Government with the documentation necessary to determine the acceptability of products as specified in the DEI work request. The ADP shall be prepared, maintained, and/or delivered in accordance with the requirements of DRD 1163CM-001, Acceptance Data Package.
- c) The Contractor's quality department shall be the primary interface with the Government quality assurance organization. The Government quality engineering organization shall provide project level quality inspection and test requirements prior to fabrication and assembly of quality sensitive hardware. The Government quality assurance organization will perform mandatory inspection points (MIPs) as specified by the Government quality engineering organization on quality sensitive Products.
- d) For all shop operations of quality sensitive products, certification/qualification shall be required for all personnel controlling special processes and performing fabrication and inspection operations of a specialized nature. The Government will provide the requirements for applicable certifications.
- e) The Contractor shall request, through the Technical Monitor, Government support for x-ray nondestructive evaluation (NDE) inspections when specialized inspection equipment already exists within other Government organizations.

All NDE inspections performed by NASA shall be verified by the NASA MSFC quality assurance organization or other work request designated personnel prior to return of the articles and materials for further processing by the Contractor.

The Contractor, when requested by the COTR, shall provide ultrasonic, magnaflux and dye penetrant for non-destructive evaluation (NDE) inspections.

- f) The Contractor shall support a Functional Configuration/Physical Configuration Audit Documentation process. This process is known as FCA & PCA respectively and shall be governed by DRD 1163CM-002, Functional Configuration/Physical Configuration Audit Documentation.

The Contractor shall classify nonconformities for quality sensitive products as either "Minor" or "Major." Minor nonconformities shall be defined as a nonconformance that involves a single occurrence in failing to meet a requirement that does not affect a safety related characteristic or for equipment/tooling failure. Major nonconformities will consist of all other nonconformities, including nonconformities as a result of a trend analysis. A correction action process shall be required for all major nonconformities that shall be verified as effective in preventing the nonconformity from reoccurring. The Contractor shall document all product and Quality Management System (QMS) nonconformities in Contractor's QMS.

Discrepancies for quality sensitive products that are for "Rework" shall be documented as a SQUAWK in the Visual Quality (VQ) database. All other quality sensitive product nonconformities shall be documented in the nonconformance module of the VQ database.

For non-quality sensitive products, non-conformances shall be documented within VISUAL Manufacturing™.

All dispositions except "rework" shall be approved by NASA by submittal of a Deviation Approval Request (DAR), MSFC-FORM-847 and instructions; or through a Material Review Board (MRB) process on the Contractors discrepancy record, as specified by MPR 8730.3 and by the designated project level representative.

The Contractor shall be responsible, when applicable, for material certification of all materials used to fabricate quality sensitive hardware and other hardware when specified on the Customer Order. This shall include, but not be limited to, requests for Government certification, certification from commercial sources, or spectrographic analysis using Government-furnished equipment (GFE). The Contractor shall verify raw material test reports for both chemical composition and tensile strength in conjunction with SAE AS9100, paragraph section 7.4.3 and/or as requested by the NASA quality assurance organization through the COTR. The current raw material testing verification process shall be approved by NASA. When requested, material certification records shall be part of the acceptance data package maintained in the Contractor's record center. The Contractor shall investigate MSFC or vendor Alerts on materials and hardware when requested by the COTR.

The Contractor shall maintain an optical alignment, weight, and center of gravity capability.

The Contractor's subcontracts shall comply with the applicable portions of the Contractor's approved internal ANSI/ISO/ASQC Q9001:1994 or Q9001:2000 requirements. The Contractor shall utilize the MSFC Audited Vendor List (AVL).

- 1) All subcontracts let for quality sensitive products shall utilize the MSFC supplier listings as identified for use in MWI 5330.1, section 6.2 and the links herein:

AVL: Audited Vendor List

LVL: Limited Vendor List

PSAL: Project Specific Approved Supplier List

AVL: [https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default\\_avl.asp](https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default_avl.asp)

LVL: <https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default.asp>

PSAL: [https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default\\_psal.asp](https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default_psal.asp)

- 2) All non-quality sensitive products subcontracted proposed suppliers that are not on the above referenced supplier lists (AVL, LVL, PSAL) shall be evaluated for their ability to meet purchase requirements by the Contractor. If NASA product requester specifies a vendor, the Contractor shall evaluate specified vendor based on information provided

by the requestor. If Contractor feels that the submitted supplier cannot meet the requirements of the purchase order, coordination for resolution shall be requested through the designated project level representative.

2.4.11 Planning and Control - The Contractor shall plan, schedule, track, and status manufacturing tasks through the fabrication shops.

The Contractor shall perform manufacturing planning to accomplish the requirements of the Customer Orders. The Contractor's planning department shall coordinate problems through the Technical Monitor and ensure "as-built" configuration agrees with the "as-designed" configuration. In addition, the Contractor's planning department shall be the primary interface between the Technical Monitor and the Contractor's other organizational departments for information, status, schedules, and estimates relative to the Customer Orders.

The Contractor shall perform production control functions as necessary to accomplish the requirements of both the Customer Order and Work Order. The Contractor shall provide accurate and reliable Work Order status and schedule information when requested by the COTR. The Contractor's production control shall assign manpower allocations to all approved Customer Orders.

The Contractor shall operate and maintain the storeroom. This task shall include, but not be limited to, inventory control, performing periodic inventories, receipt, issue, storage and handling of hardware, parts, and materials for both the Government and Contractor.

The Contractor shall not be responsible for any Program Critical Hardware (PCH) handling or moves. When PCH handling or moves becomes necessary, the Contractor shall be responsible for coordinating the move with the Government and the Government's contractors that provide this service. The Contractor shall also request assistance for oversized equipment moves from the Government when such moves are required. The Contractor shall provide certified forklift and crane operators for handling normal equipment and material moves in their areas of responsibility.

The Contractor shall utilize proof-loaded slings and fixtures used in normal material and hardware handling operations within the Contractor's work area. The Contractor shall request through the Technical Monitor support from the Government for proof-loading of oversized lifting slings and fixtures when applicable.

The Contractor shall operate and maintain the tool crib and inventory system utilizing CribMaster™. The current Government provided seat subscriptions are fully subscribed in the fabrication shop area. This shall include, but not be limited to, the identification and bar coding of each tool room item, issuing and tracking tool withdrawals, purchasing supplies and materials for the tool crib including new and replacement tools, performing periodic inventories, and providing reporting.

The Government-owned online computer system is VISUAL Enterprise 6.3.8 software application. The Government is responsible for maintaining this software package with all seats currently fully subscribed in the managing of the fabrication shop area only. The current modules used within Visual Enterprise are: Manufacturing, Automated Material Tracking System, Automated Labor Tracking System, and Visual Quality Data Collection Seats.

The Contractor shall use VM to manage the planning, tracking, scheduling, procuring, and inventorying of parts and work flow through the fabrication shop. The VM major functional areas are Quotations, Customer Order Entry, Engineering Definition (Routing and Bill of Material), Production Planning, Material Planning,

Scheduling, Shop Floor Barcode Control, Job Costing, Purchasing (both to the Work Order and Inventory), Inventory Control, Shipping, Invoicing, and Customer Inquiry.

The following details the work processing procedures currently used by the Government to request services from the Contractor and how the work is monitored and accepted.

Fabrication services receive requests for fabrication and assembly tasks on a MSFC Form 3751 (Fabrication Request). Once requirements are clearly identified, a Government Manufacturer Engineer (ME) will develop the requirements for and issue a Customer Order in Visual Manufacturing™ (VM). The Contractor utilizes the issued Customer Order and Form 3751 to define the hardware configuration, quantity, documentation, GFE, end-item disposition, any other special requirements, estimated cost and delivery date. All Customer Orders are approved by the responsible NASA organization and its delegated personnel (typically Manufacturing Engineers (ME)).

The Contractor reviews the Customer Order and documentation package, plans, coordinates, procures parts and materials, and generates a Work Order (WO) in VM. The Contractor's planning department is the primary interface between the MEs and the Contractor's other organizational departments for information, status, schedules, and estimates.

The WO package is routed to the Contractor's Production Control (PC) department, where work is assigned and scheduled with the proper manufacturing groups. The PC department monitors the fabrication and assembly work process, expedites moves from shop station to shop station, and coordinates inputs to accomplish the requirements of both the Customer Order and WO.

The Contractor fabricates and/or assembles, inspects and verifies that hardware meets the requirements of the Customer Order, WO and design drawing documentation.

Upon completion of the Customer Order requirements, the Contractor transfers the Deliverable End Item (DEI) along with the Acceptance Data Package (ADP) to the fabrication services storeroom. Storeroom personnel notify the customer and obtain the signature of the individual picking up the completed item(s).

The Contractor shall use the following Government provided software packages for job simulation and for "computer-aided manufacturing." Detailed specifics of suites and modules are to be verified by the Contractor.

- a) Delmia                      Machine Tool Builder  
                                    Machine Tool Path Simulation
- b) ICAM Software          D-M5 CAM-POST
- c) CATIA v5                    Manufacturing
  - (a) Design and Advanced Machinist
  - (b) Lathe Machining
  - (c) Prismatic Machining Preparation Assistant

## 2.5 Electrical Fabrication, Test, and Assembly

2.5.1 Fabrication - The Contractor shall perform electrical fabrication, which typically involves, but is not limited to, hand soldering, printed circuit board population, automated assembly of surface mount technology, strain gage installation, coil winding, electrical cable harness assembly, potting, staking, conformal coating, fiber optics assembly, and electrical/mechanical "black box" assembly. Selected items of electrical work require electrostatic protection of electrically sensitive components during processing.

2.5.2 Testing - The Contractor shall perform electrical testing, which typically involves, but not limited to, various testing methods and techniques on Electrical, Electronic and Electromechanical (EEE) parts, components, sub-systems and systems. These tests include; functional acceptance tests of EEE parts before board population; electrical integrity tests of flight and Ground Support Equipment (GSE) cable assemblies to ensure proper wiring, isolation and workmanship; and the electrical acceptance tests of flight and engineering hardware. The Contractor shall perform fabrication and test of GSE and special test equipment (STE), operation of automated test systems, fabricate and test prototype circuit boards, interconnecting cables, control boxes and breakout boxes, with fabrication and testing supporting GSE and Flight Hardware.

2.5.3 Assembly - The Contractor shall perform precision and general assembly in the open shop and in environmentally controlled clean rooms on both flight experiment hardware and test hardware. Some assembly operations require adhesive bonding technology.

2.5.4 Calibration - The Contractor shall control measurement processes to ensure the accuracy of measurement results affecting safety and mission success for measurement and test equipment (MTE) in accordance with NPD 8730.1 and MPR 8730.5. On-Center Government metrology and calibration services are available for use as needed. The Contractor may utilize Government approved outsource calibration services as approved by the COTR. The Office of Record for all MSFC MTE calibration records shall be the on-Center MSFC Metrology and Calibration Laboratory and the Government owned MSFC Metrology and Calibration Database (NPR 1441.1, NASA Records Retention Schedules and MPR 8730.5).

2.5.5 Quality Control - The Contractor shall ensure all quality sensitive items fabricated for commercial customers shall be procured and inspected through a Space Act Agreement.

The Contractor shall ensure all subcontracts comply with the applicable portions of the Contractor's approved internal ANSI/ISO/ASQC Q9001:1994 or Q9001:2000 requirements. The Contractor shall utilize the MSFC Audited Vendor List (AVL).

- 1) All subcontracts let for quality sensitive products shall utilize the MSFC supplier listings as identified for use in MWI 5330.1, section 6.2 and the links herein:

AVL: Audited Vendor List

LVL: Limited Vendor List

PSAL: Project Specific Approved Supplier List

AVL: [https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default\\_avl.asp](https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default_avl.asp)

LVL: <https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default.asp>

PSAL: [https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default\\_psal.asp](https://msfcsma3.msfc.nasa.gov/dbwebs/apps/lvl/default_psal.asp)

- 2) All non-quality sensitive products subcontracted proposed suppliers that are not on the above referenced supplier lists (AVL, LVL, PSAL) shall be specified by the NASA product requester and evaluated for their ability to meet purchase requirements by the

Contractor based on the information provided by the requester on the supplier. Supplier use for these products shall be limited to articles and materials purchased for the specific work request. If the Contractor feels that the submitted supplier cannot meet the requirements of the purchase order, coordination for resolution shall be requested through the designated project level COTR representative.

MSFC is transitioning to automated fabrication of surface mount assemblies. The Contractor shall provide a skill mix that includes both hand assembly and machine assembly experience to meet the technical requirements of this WBS.

All Contractor employees shall obtain certification to the requirements of NASA-STD-8739.

## **2.6 Reserved**

## **2.7 Reserved**

## **2.8 Reserved**

**2.9 Environmental Gas Laboratory Support.** MSFC has the requirement to verify the cleanliness of a variety of hardware and facilities that prevents the contamination of space flight hardware. These facilities and equipment include clean rooms at all cleanliness levels, flow benches, small hardware and equipment, and large hardware and cross-country cryogenic liquid and gas lines.

The cleanliness verifications are requested in two ways; (1) MSFC customer organizations request regularly scheduled verification checks, or (2) MSFC customers who do not need regular verifications request special one-time verifications performed within a specified time period. All data analyses and findings for the week are compiled into one Excel spreadsheet and sent to all customers for whom evaluations were performed.

The Contractor shall evaluate, as directed by the COTR, MSFC clean rooms, MSFC propellant lines and their components, and propellant storage vessels and their components to determine contamination or cleanliness levels. The Contractor shall follow a scheduled sampling routine to check the clean rooms and propellant systems at MSFC to determine contamination levels. The Contractor shall also perform any analysis not included on the routine checklist, if requested by the COTR. The Contractor shall develop and implement an effective electronic Special Test Order (STO) system, formerly called an Avoid Verbal Orders (AVO) system. This system will serve to request special or one-time only evaluations of clean rooms or lines. The Contractor shall track all data and evaluations from a central location, and provide a written report of all findings weekly. The Contractor shall inform the COTR immediately if any test result is out of the tolerance levels established by MSFC or by the COTR.

## **2.10 Reserved**

## **2.11 Reserved**

**2.12 Optics Support.** The Contractor shall perform optical coating, optical fabrication and metrology at MSFC, including support of JWST testing in the X-Ray Calibration Facility. The Contractor shall maintain and operate the vacuum coating facilities and coating deposition equipment, perform inspection, precision cleaning and handling of optics and vacuum hardware, and perform optical testing. The Contractor shall also perform optical fabrication, which includes, but is not limited to, resizing glass substrates via Blanchard or curve generator grinding. The Contractor shall perform optical metrology, which includes, but is not limited to, the use of the Coordinate Measuring Machine or ZYGO interferometer.

## 2.13 Reserved

### 3.0 IDIQ Support

Any of the following sections that do not have specific requirements will include the requirements for the respective function specified in 2.0.

**3.1 Materials Testing.** The Contractor shall perform materials testing to support NASA and MSFC missions and objectives, and shall support engineering oversight of these tests. This testing includes, but is not limited to, ignition and combustion testing on metallic and nonmetallic materials, toxic offgas testing on materials and components, thermal vacuum stability outgassing testing on materials, and advanced materials testing supporting space exploration.

**3.1.1 Promoted Ignition-Combustion Testing** - The Contractor shall perform the Upward Flammability of Materials in Gaseous Oxygen (GOX) testing of materials in a high-pressure gaseous oxygen environment, with both the Elevated Temperature and the Ambient Temperature Promoted Ignition-Combustion Testers. These tests are defined by Test 17 of NASA-STD-6001, *Flammability, Odor, Offgassing, and Compatibility Requirements and Test Procedures for Materials in Environments That Support Combustion*, and any variations or revisions thereof. Test pressures range from ambient pressure to 10,000 psi, with temperatures ranging from ambient to 2,200°F. The Contractor shall lead the effort to produce any standards related to the elevated temperature test. The Contractor shall be responsible for ensuring that all equipment is properly calibrated prior to beginning a test. Any test equipment not properly calibrated shall be replaced with calibrated equipment prior to performing any test. The Contractor shall validate the test data and ensure the test data correlates with test data generated by other sources. Any test data that cannot be validated or correlated with the test data from other sources shall be immediately brought to the attention of the COTR. This task also involves data analysis, and inputting all test data and results into the Materials and Processes Technical Information System (MAPTIS) database.

**3.1.2 Flammability Testing** - The Contractor shall perform Flammability and Wire Insulation Flammability Testing of materials in air and in oxygen enriched atmospheres. These tests are as defined by Tests 1, 4 and 10 of NASA-STD-6001 and any variations or revisions thereof. The Contractor shall lead the effort to produce any standards related to the elevated temperature test. The Contractor shall be responsible for ensuring that all equipment is properly calibrated prior to beginning a test. Any test equipment not properly calibrated shall be replaced with calibrated equipment prior to performing any test. The Contractor shall validate the test data and ensure the test data correlates with test data generated by other sources. Any test data that cannot be validated or correlated with the test data from other sources shall be immediately brought to the attention of the COTR. This task also involves data analysis, and inputting all test data and results into the Materials and Processes Technical Information System (MAPTIS) database.

**3.1.3 Liquid and Gaseous Oxygen Mechanical Impact Testing** - The Contractor shall perform Mechanical Impact for Materials in Ambient Pressure Liquid Oxygen (LOX) testing and Mechanical Impact for Materials in Variable Pressure LOX and GOX testing for materials, as defined by Test 13A and 13B of NASA-STD-6001 and any variations or revisions thereof. The test temperature at ambient pressure is approximately -297°F. The variable pressure test utilizes test temperatures from -297°F to +1,000°F, and test pressures from ambient to 10,000 psi. The Contractor shall lead the effort to produce any standards related to the elevated temperature test. The Contractor shall be responsible for ensuring that all equipment is properly calibrated prior to beginning a test. Any test equipment not properly calibrated shall be replaced with calibrated

equipment prior to performing any test. The Contractor shall validate the test data and ensure the test data correlates with test data generated by other sources. Any test data that cannot be validated or correlated with the test data from other sources shall be immediately be brought to the attention of the COTR. This task also involves data analysis, and inputting all test data and results into the MAPTIS database.

3.1.4 Advanced Materials Ignition/Combustion Testing - The Contractor shall perform advanced materials ignition testing. These include: Adiabatic Compression (Pneumatic Impact) for Materials in ambient and high pressure gaseous oxygen environments, as defined by Test 14 of NASA-STD-6001; Oxygen Index Testing of materials to determine the minimum oxygen concentration that will support the combustion of a material, as defined by the American Society for Testing and Materials (ASTM) document ASTM D2863; Multimodal Friction Ignition Testing; Heat of Combustion Testing; Wire Arc Tracking Testing; Puncture Testing; Reactivity in Aerospace Fluids Testing; and Autogenous Ignition Temperature Testing of materials to determine the temperature at which a material will spontaneously ignite without the presence of a spark or open flame, as defined by ASTM G72. This task shall also include the development and utilization of new test equipment and the development of new test methods. The Contractor shall lead the effort to produce any standards related to the elevated temperature test. The Contractor shall be responsible for ensuring that all equipment is properly calibrated prior to beginning a test. Any test equipment not properly calibrated shall be replaced with calibrated equipment prior to performing any test. The Contractor shall validate the test data and ensure the test data correlates with test data generated by other sources. Any test data that cannot be validated or correlated with the test data from other sources shall be immediately be brought to the attention of the COTR. This task also involves data analysis, and inputting all test data and results into the MAPTIS database.

3.1.5 Thermal Vacuum Stability (Outgassing) Testing  
The Contractor shall perform Thermal Vacuum Stability Testing of materials to determine the characteristics of materials when exposed to vacuum conditions, as defined by the Johnson Space Center (JSC) document SP-R-0022/ASTM-E-595, and any variations thereof. The Contractor shall lead the effort to produce any standards related to the elevated temperature test. The Contractor shall be responsible for ensuring that all equipment is properly calibrated prior to beginning a test. Any test equipment not properly calibrated shall be replaced with calibrated equipment prior to performing any test. The Contractor shall validate the test data and ensure the test data correlates with test data generated by other sources. Any test data that cannot be validated or correlated with the test data from other sources shall be immediately brought to the attention of the COTR. This task also involves data analysis, and inputting all test data and results into the MAPTIS database.

3.1.6 Toxic Offgassing (Toxicity) Testing - The Contractor shall perform Toxic Offgassing Testing of materials and assembled articles. Toxicity testing includes the *Determination of Combustion By-Products from Upward Flame Propagation Testing*, *Determination of Offgassed Products* and *Determination of Offgassed Products from Assembled Articles*. These tests are defined by Tests 7 and 16 of NASA-STD-6001 and any variations or revisions thereof. The Contractor shall lead the effort to produce any standards related to the elevated temperature test. The Contractor shall be responsible for ensuring that all equipment is properly calibrated prior to beginning a test. Any test equipment not properly calibrated shall be replaced with calibrated equipment prior to performing any test. The Contractor shall validate the test data and ensure the test data correlates with test data generated by other sources. Any test data that cannot be validated or correlated with the test data from other sources shall be immediately brought to the attention of the COTR. This task also involves data analysis, and inputting all test data and results into the MAPTIS database.

3.1.7 Test Sample Verification and Preparation - The Contractor shall perform a complete analysis on each test sample received for the testing to ensure that the information is complete and accurate. The Contractor shall verify that each sample sent for testing has all of the information needed for identification, and that all of the information is accurate. This sometimes requires coordination with the test requester, the materials supplier, the manufacturer, and other sources. The Contractor shall also prepare each required test sample in the form in which it is needed, including substrate preparation, sample curing and sample sizing. The collected information shall be entered into the MAPTIS database. This database is currently used by the Government for the management and tracking of all work under PWS 2.1. The Contractor shall receive notification from the requester indicating if the sample and data are to be labeled as one of the following: Sensitive but Unclassified (SBU); Proprietary; International Trafficking in Arms (ITAR); Export Administration Regulations (EAR) or other security related classification. The data shall be appropriately labeled. The samples and data shall be tracked and protected in accordance with NASA guideline and procedures.

3.1.8 Engineering Analysis of Materials Testing, Data, and Results - The Contractor shall perform engineering analyses for the areas covered under this PWS element and any Task Orders developed. This effort includes analysis of test setups, test procedures, and data generated by the testing. These engineering analyses shall ensure that test data is generated using existing organizational instructions, and the data is either consistent with previous test data or valid explanations exist why anomalies have occurred. The Contractor shall receive instructions from the requester indicating if the sample and data are to be labeled as one of the following: Sensitive but Unclassified (SBU); Proprietary; International Traffic in Arms Regulations (ITAR); Export Administration Regulations (EAR); or other security related classification. The data shall be appropriately labeled. The samples and data shall be tracked and protected in accordance with NASA guideline and procedures.

3.1.9 Test Innovations - The Contractor will strive to provide innovations and improvements to the existing ways of performing tasks and interpreting data for the testing covered under this PWS. These tasks include analysis of MSFC produced test data, analysis of test data from other sources, application requests and systems evaluations. The Contractor shall maintain sufficient skill and knowledge of the test capabilities to provide technical expertise and guidance to MAPTIS database personnel for data approval and data entry.

3.1.10 Oxygen Compatibility Assessments - The Contractor shall perform oxygen compatibility assessments. These assessments are conducted for the safe operation of oxygen systems for NASA and/or private industries. The Contractor shall perform an Oxygen Compatibility Assessment, also known as Oxygen Hazards Analysis, for an oxygen system or component. Upon completion, the Contractor shall provide a complete analysis in final presentation form as agreed upon with the COTR. The Contractor shall maintain sufficient skill and knowledge of an Oxygen Compatibility Assessment to provide necessary technical guidance or expertise.

3.1.11 Development of Internal, Scientific and Data Documentation and Publications - The Contractor shall create scientific, technical and data documents, and internal documentation and publications as needed and as directed by the COTR. The documents required include research papers to be published by scientific organizations, periodical sections, newspaper articles, failure analyses, problem assessments, problem resolutions, anomaly investigations, preferred materials applications documents, data explanation documents, technical evaluation documentation, and other similar scientific and engineering documentation. The Contractor shall also create needed internal documentation, which include Organizational Instructions, safety documents and communications documentation. The Contractor shall work with the MSFC printing office to

ensure that all documents are in the proper format, printed properly and delivered when required. The Contractor shall also be responsible for supporting the distribution effort of all documents created under this task.

3.1.12 Materials Research and Special Studies - The Contractor shall use supplemental research tasks to fill any available time when employees and equipment are not fully utilized for testing and analysis in WBS elements 2.1.1 through 2.1.11, or for commercial work. The Contractor shall conduct materials research in areas related to this PWS and have research tasks ongoing at all times. The Contractor shall also perform research and special studies for other materials and processes disciplines, when directed by, or with the approval of, the COTR. These research and special studies shall enhance the general knowledge base of the scientific community. The Contractor shall publish the research in readily available publications and in a format used by the specific publication or by the scientific community. Acceptable publications include periodicals and standards published by nationally recognized organizations, such as the Society of Automotive Engineers (SAE), ASTM International, the International Organization for Standardization (ISO), and the American Society for Materials (ASM) International, or other as approved by the COTR. The Contract shall, when directed by the COTR, present these publications at meetings, conferences, symposia, etc.

**3.2 ETF/EFDTF Test Support.** The Contractor shall assist Government personnel in the maintenance and operations of MSFC's Environmental Test Facility (ETF) and Experimental Fluid Dynamics Test Facility (EFDTF). These facilities require common and unique service support as directed by work authorizing documentation or as requested by MSFC's Test Laboratory to perform test activities associated with the design, development, certification, and operation of flight structures, payloads, systems, and components.

The MSFC Test Laboratory Experimental Fluids and Environmental Test Branch is responsible for the ETF and the EFDTF and utilizes Test Preparation Sheets (TPS) as the primary work authorizing documentation. Standard Operation Procedures (SOP), Facility Operating Procedures (FOP), Facility Activation Procedures (FAP) and Organizational Issuances (OI) are examples of detailed instructions which will be utilized to perform tasks associated with various operations, maintenance, or repairs in accordance with an approved TPS.

3.2.1 Planning and Control - The Government will provide all technical direction, and the Contractor shall assist the Government personnel in the planning, coordination, and surveillance of all activities necessary to execute all TPS requests issued for these facilities. The Contractor shall:

3.2.1.1 The Contractor shall:

- a) Provide qualified personnel on the basis of appropriate education, training, experience, and certification to perform assigned tasks, accomplishing safety critical operations in accordance with regulatory requirements and in accordance with NASA site-specific standards and procedures. Personal shall be provided cross training in similar job descriptions as deemed appropriate to enhance operational efficiencies.
- b) Schedule and provide a qualified and adequate workforce to meet the schedule and performance requirements for assigned tasks; maintaining working shifts in accordance with WBS 1.2.6 "Contractor Employee Overtime" to support the requirements of the Government's customers. This may require that services be provided outside normal business hours (e.g., alternate work schedules, night shifts, weekends, holidays, etc.). The Contractor shall provide a technically qualified person to be

responsible for specific operations and tests performed outside normal business hours when requested by Branch management.

- c) Implement approved TPSs and test schedules per Branch management guidance; ensuring all contract and assigned requirements meet the defined object in a cost-efficient, safe, reliable, and timely manner and when required, notify the Government of all deficiencies and issues providing timely and effective documented corrective and preventive action(s) for deficiencies within the responsibility of the contractor.
- d) Ensure all materials, components, tools, and equipment used in support of assigned facilities and systems are maintained, tracked, and installed as required in accordance with NASA and MSFC standards and procedures; maintaining all assigned work areas in a clean and orderly condition and support any additional cleaning activities.
- e) Ensure all assigned TPSs are complete before final closure, filing, and electronic archival to include, but not limited to: all steps are properly "signed-off", changes or deletions are properly approved, all required data has been recorded and all necessary supporting documentation are completed . (e.g., data files, digital photos, video files, setup schematics, facility drawings, digitized "As-Runs" ...). Additionally, all "Closed" TPSs and supporting documentation shall be correctly filed within the Branch filing office and all supporting electronic data is correctly archived in the designated folder on the Branch data server, verifying any information used with the Test Laboratory Estimation Tool is correctly linked/mapped (e.g., charge codes, estimate numbers, chamber POC's, ...); notify Branch management of any issues.

#### 3.2.1.2 The Contractor shall assist Government personnel:

- a) In planning, coordinating, implementing, and monitoring test activities to successfully perform all customer test requirements and assigned tasks.
- b) In planning and coordinating facility, system, and equipment objectives (e.g., modification, upgrades, relocations, refurbishment, disassembly, etc) and corrective and preventive maintenance.
- c) Preparing for Test Readiness reviews, meetings, and events.

3.2.2 ETF Chamber Operations and Support – The Contractor shall provide technically qualified personnel for the facilities operations disciplines of mechanical, electrical, controls, instrumentation, and data acquisition.

The Contractor shall provide technically qualified personnel of trade disciplines including but not limited to those listed below, to perform all assign tasks to support test operations; to include, but is not limited to, facility and support equipment installation, buildup, and operation; facility and support equipment corrective and preventive maintenance; instrumentation installation and checkout; test support fabrication and setup; data acquisition and reduction; video monitoring; test article handling; and the installation and use of high-pressure and cryogenic systems. All operational services shall be performed in accordance with an approved TPS to operate and maintain facilities, systems and equipment in accordance with all applicable codes and procedures, both NASA and industry, as required, for each project, modification, or maintenance activity.

*Trade Disciplines:* electrician, welding (not certified), machining, refrigeration, (including cascade), pipe fitting, helium leak detection, and chemical inventory and waste management.

The Contractor shall perform and document all services in accordance with an approved TPS to complete facility, system, and equipment corrective and preventative maintenance. In addition, all maintenance performed by contractor personnel shall be coordinated at assigned facilities to minimize conflicts or schedule delays.

Testing performed at the ETF requires frequent, around-the-clock operations. During these periods, with approval of the COTR, alternate work schedules shall be established to support weekend and second and third shift operations.

**3.2.3 EFDTF Facility Operations and Support** – The EFDTF Chamber Operations and Support activities described below shall be performed for all test facilities with the exception of the Solid Rocket Motor Air Flow Facility and the Aerodynamic Research Facility. The Contractor shall provide technically qualified personnel for the facilities operations disciplines of mechanical, electrical, controls, instrumentation, and data acquisition.

The Contractor shall provide technically qualified personnel of trade disciplines including but not limited to those listed below, to perform all assign tasks to support test operations; to include, but is not limited to, facility and support equipment installation, buildup, and operation; facility and support equipment corrective and preventive maintenance; instrumentation installation and checkout; test support fabrication and setup; data acquisition and reduction; video monitoring; test article handling; and the installation and use of high-pressure and cryogenic systems. All operational services shall be performed in accordance with an approved TPS to operate and maintain facilities, systems and equipment in accordance with all applicable codes and procedures, both NASA and industry, as required, for each project, modification, or maintenance activity.

*Trade Disciplines:* electrician, welding (not certified), machining, refrigeration, (Including cascade), pipe fitting, and helium leak detection.

The Contractor shall perform and document all services in accordance with an approved TPS to complete facility, system, and equipment corrective and preventative maintenance. In addition, all maintenance performed by contractor personnel shall be coordinated at assigned facilities to minimize conflicts or schedule delays.

**3.3 Structural Test Support.** The Structural Test Facility is a high bay facility complex that provides office space, laboratory space, test cells, machine shop, fabrication areas, material handling systems, load control systems, data acquisition systems, and utilities to support aerospace structural testing. Structural strength test and dynamic load test activities are planned and executed in this facility to support the design, development, certification, and operation of flight structures, payloads, systems, and components. Although Structural Strength Test and Structural Dynamics Test are regarded as separate engineering disciplines at MSFC, the personnel and facility resources for these engineering disciplines are co-located within the Structural Test Facility. In some cases, other facilities at MSFC may be utilized for structural testing operations when test article size, test hazards, or other specific test requirements preclude test operation at the Structural Test Facility.

Structural Strength testing is an engineering discipline involved primarily with the application of static or quasi-static loads (e.g., mechanical, thermal, pneumatic) to aerospace hardware in an effort to accurately determine the hardware response to such loading (e.g., deflection, stress, strain). Structural Strength testing is primarily performed in the Structural Test Facility located in

Building 4619 at MSFC. There are numerous structural test positions within the Structural Test Facility. Each test position has specific test capabilities with regard to load application limits (tensile load, compressive load, shear load) and test article size. Structural Dynamics testing involves investigation into the dynamic response of structures during the application of various types of loads. The Structural Test Facility has dedicated test areas for vibration, acoustic, modal and shock testing.

**3.3.1 Structural Test Facility Planning and Control** - The Contractor shall be responsible for daily planning, coordination, and technical direction of Contractor activities performed at the Structural Test Facility. The Contractor shall be responsible for coordinating daily with Structural Test Facility engineers and management as required to ensure that Contractor personnel are utilized in a cost effective and productive manner to fully support Structural Test Facility priorities and objectives. Currently, the Government uses a Test Preparation Sheet (TPS) (reference ET01-PRO-OWI-003, Test Preparation Sheet Instructions) to direct the contractor to perform technician work.

**3.3.2 Structural Test Facility Support** - The Contractor shall provide technician support for all structural strength and structural dynamics work activities managed through the Structural Test Facility whether work is performed at the Structural Test Facility or at MSFC on-site test facilities. The scope of this WBS includes technician support required for maintenance, upgrade, modification and refurbishment of existing Structural Test Facility systems and equipment. This work also involves support during test buildup and test operations, and support during buildup and fabrication of new facility capabilities required to accomplish the mission of the Structural Test Facility. Typical work activities include, but are not limited to:

- power hand tool operation (drills, metal cutting saws, etc.).
  - power equipment/machining operations (drill press, table saws, CNC mills and lathe, manual mills and lathe, metal cutting band saw, etc).
- hydraulic pump maintenance, troubleshooting and operation.
- load control system maintenance, troubleshooting and operation.
- vacuum system maintenance, troubleshooting and operation.
  - pneumatic system maintenance, troubleshooting and operation (air, GN2, helium, hydrogen, etc.).
  - cryogenic system maintenance, troubleshooting and operation (LN2, LH2, LHe).
- electrical wire termination.
- electrical cable fabrication.
- tensile test machine maintenance, troubleshooting and operation.
  - material handling, mobile crane operation, bridge crane operation, aerial lift operation, fork lift operation.
- rigging operations required to support lift operations.
  - data system operations support (fabricating drag-on cables, wiring termination, etc).
  - data sensor installation (pressure transducers, strain gages, temperature sensors, load cells, etc).
- welding operations (MIG, TIG, stick).
- digital audio/video equipment installation and operation.

**3.3.3 Master Schedule** - The Contractor shall maintain a master Structural Test Facility, ETF, EFDTF combined testing schedule.

#### **3.4 Fabrication and Assembly of R&D Space Flight and Associated Hardware.**

#### **3.5 Electrical Fabrication, Test, and Assembly.**

**3.6 Metrology and Calibration Services.** The contractor shall operate and maintain the MSFC Metrology and Calibration Laboratory (MCL) and assigned standards, measurement and test equipment (MTE), databases, and associated items to successfully perform all required metrology and calibration services as defined within the Task Order to support the roles and missions of NASA, MSFC, and other approved customers in a timely and efficient manner. All metrology and calibration services shall be in accordance with NPD 8730.1B and MPR 8730.5.

The Contractor shall prepare and submit reports in accordance with DRD 1163MA-010, Monthly Metrology and Calibration Services and Reports and DRD 1163QE-002, Deficiency Corrective and Preventive Action Report.

### **3.7 Space Environmental Effects Testing**

3.7.1 Contamination Control Support -The Contractor shall provide contamination control support for various programs to include review of program requirements, plans for implementation of those requirements, review of production processes and facilities, and participate in program audits as required. Processes that will require review include cleaning, cleanliness inspection, and contamination sampling. The Contractor shall operate laboratory instrumentation such as Fourier Transform Infrared (FTIR) spectrometers, contamination application systems, and vacuum test chambers for materials outgassing tests. A general knowledge of general laboratory protocol, basic spectroscopic techniques, materials analysis /characterization instrumentation operation, chemical solution mixing, sample preparation (cleaning, grit blast, contamination application, etc) and handling procedures is required. The Contractor shall interpret the results of testing, and provide written reports at the completion of each test. The Contractor shall attend meetings, present results and interact at the Program/Project level.

3.7.2 Space Environmental Effects Testing - The Contractor shall perform literature research and testing for materials exposed to space environments in order to accurately simulate a mission specific space environment within the laboratory, subject a material or system to that environment, and measure performance metrics after space environment exposure. The Contractor shall perform thorough literature research for past data and history on Space Environments Effects (SEE) including all data developed during Apollo, Skylab, other NASA missions, and missions of other agencies and countries whose data is available for public review. The Contractor shall also design, configure, modify, operate, and maintain the multiple and varied SEE test systems utilized for atomic oxygen (AO), ultraviolet (UV) radiation, charged particle radiation, plasma, and contamination including combined environments exposure testing. The Contractor shall also support Impact Test Facility operations including hypervelocity, ballistic, and environmental gun capabilities. The testing and operation includes performing the necessary calculations for accurate SEE irradiations, aid in the design and assembly of data acquisition systems, pre-test and post-test materials analyses, and impact assessments. The Contractor shall perform limited fabrication and assembly of test hardware, operate associated materials analysis/characterization instrumentation, interpret the results of testing, and provide written reports at the completion of each test. The Contractor shall attend meetings, present results and interact at the Program/Project level. Special training is required for radiation source, propellant and explosives handling as well as test system operation.

3.7.3 Electrostatic Levitator (ESL) System Operations - The Contractor shall provide ESL support to configure, modify, operate, and maintain the test systems and associated support equipment including vacuum hardware, operating control systems, data acquisition systems, and multiple class lasers. The Contractor shall prepare samples and operate laboratory instrumentation such as optical pyrometers and spectrometers. The Contractor shall interpret the results of testing, and provide written reports at the completion of each test. The Contractor shall attend meetings, present results and interact at the Program/Project level.

**3.7.4 Development of Internal, Scientific and Data Documentation and Publications** - The Contractor shall create scientific, technical and data documents, and internal documentation and publications as needed and as directed by the COTR. The documents required include research papers to be published by scientific organizations, periodical sections, newspaper articles, failure analyses, problem assessments, problem resolutions, anomaly investigations, preferred materials applications documents, data explanation documents, technical evaluation documentation, and other similar scientific and engineering documentation. The Contractor shall also create needed internal documentation, which include Organizational Instructions, safety documents and communications documentation. The Contractor shall work with the MSFC printing office to ensure that all documents are in the proper format, printed properly and delivered when required. The Contractor shall also be responsible for supporting the distribution effort of all documents created under this task.

**3.8 Reserved.**

**3.9 Environmental Gas Laboratory Support.**

**3.10 Computer-Aided Design (CAD) Drawing Support.** The Contractor shall provide library support services to maintain, reproduce, and store detailed drawings and engineering documentation. Services shall include printing and carrying baseline engineering drawings prints which have completed the appropriate design review to all required MSFC organization's signature authority for approval; in addition to printing and carrying all authorized drawing modifications to the same organizations for signature as the baseline and all required information is included in the archived drawing package.

**3.11 Data Analysis and Database Entry for Material and Processes Technical Information System (MAPTIS).** The Contractor shall obtain materials information and test data from manufacturers, suppliers, MSFC testing organizations, other NASA certified testing facilities, government agencies, and private companies. The Contractor shall perform engineering analyses on these for validity and enter the verified data into the MAPTIS database.

**3.12 Optics Support.**

**3.13 Tool Crib Operations.** The Contractor shall operate the two MSFC Tool Cribs (unassociated with the tool crib supporting shop operations). The Contractor shall be responsible for the order preparation, receipt, storage, and restocking of all tools and materials, and the proper distribution of stock items to employees. The Contractor shall keep the tool cribs fully stocked by purchasing all items necessary to do so without depleting existing stock. Tool Crib items include hand tools, calibrated tools, reusable or returnable items, hazardous chemicals, controlled items and expendable items, both for flight and non-flight use. The Contractor shall also request supplies, enter into the existing inventory system any purchase order data on items received, utilize the existing bar coding system, and generate special reports on equipment usage.

**3.14 Engineering Technician Support.** The Contractor shall provide engineering technician services. This includes technician support needed to design, develop, analyze, and sustain space transportation systems, payloads, and spacecraft. This also includes technical support for mission operations, research investigations, and technology development initiatives.

**3.15 Trade Service Support.** The Contractor shall provide trade services. This includes technical support needed to design, develop, analyze, and sustain space transportation systems, payloads, and spacecraft. This also includes technical support for mission operations, research investigations, and technology development initiatives.

**3.16 Valve and Component Services** The contractor shall manage, operate, and maintain the MSFC Valve and Component Laboratory (VCL) and assigned equipment, databases, and associated items to successfully perform all required services for valve and component refurbishment, repair, machining, cleaning, and test as defined within the Task Order to support the roles and missions of NASA, MSFC, and other approved customers in a timely and efficient manner.

The Contractor shall prepare and submit reports in accordance with DRD 1163MA-011, Monthly Valve and Component Services Report and DRD 1163QE-002, Deficiency Corrective and Preventive Action Report.

**3.17 Space Systems Integrated Test Facility Support.** The Contractor shall provide support for operating the center's Space Systems Integrated Test Facility. System tests encompass those activities required for the development, qualification, and acceptance testing of components, subsystems, and integrated space systems. Such activities include: prototype hardware/software development and test; ground support equipment development, checkout, and operation; test fixture design, fabrication, and assembly; flight hardware assembly and integration; preparation and development of test plans and procedures; functional, performance, and environmental test and checkout operations; test data analysis; test reporting; test discrepancy resolution; post shipment test and integration support; and flight operations and post mission support.

**3.18 Propulsion Test Support.** The Contractor shall provide all mechanical, electrical, trade, and other associated services as defined within the respective Task Order to successfully support the roles and missions of NASA, MSFC, and other approved customers' test objectives in a timely and efficient manner. In addition, the contractor shall provide all propellants and pressurants services necessary to successfully manage, engineer, operate, and maintain MSFC facilities, systems, vessels, and equipment as defined within the Task Order.

The Contractor shall prepare and submit reports in accordance with DRDs 1163CD-003, 1163MA-012, 1163MA-013, 1163MA-014, 1163MA-015, 1163MA-016, 1163MA-017 and 1163MA-018.

**3.19 Support Functions.** The Contractor shall provide support services to execute the PWS. This includes technical support needed to design, develop, analyze, and sustain space transportation systems, payloads, and spacecraft. This also includes technical support for mission operations, research investigations, and technology development initiatives.

3.19.1 Chemical Analysis - The Contractor shall perform sample collection, analysis, and reporting. The Contractor shall monitor, by chemical analyses, all chemical tanks and rinse tanks in buildings 4760 and 4705 used in various plating, degreasing, etching, cleaning, and dye processes. These tanks shall be strictly monitored to ensure that chemical parameters adhere to the requirements.

3.19.2 Quality Systems Management - The Contractor shall perform quality functions to accomplish customer requirements.

3.19.3 Planning and Control - The Contractor shall perform manufacturing and test planning, including scheduling, to accomplish customer requirements.

3.19.5 Contamination Control - The Contractor shall provide support which includes, but is not limited to, requirements definition, requirements implementation, process controls, facilities

controls, and testing techniques related to materials, processes and facilities. The Contractors shall provide support for a wide range of disciplines, from the ground processing of propulsion elements to the simulated on-orbit spacecraft exposure environments. Specific applications also include monitoring techniques, cleaning processes, cleanliness verification and foreign object debris program assessment.

3.19.8 Engineering - The Contractor shall provide engineering expertise necessary to support PWS area when requested.

3.19.9 Other Support Functions - There may be future requirements for support services that are not identified or implied in the PWS. If future additional support services are required, these requirements will be identified via Task Order. The Contractor shall perform and complete all technical requirements that meet the intent of the PWS and shall be provided adequate resources requested through this WBS.

## Glossary

**Acceptance:** The activity performed on all production articles generally consisting of inspections, measurements, and tests that demonstrate that each article was manufactured as designed and with acceptable quality and workmanship, performs in accordance with specified requirements, and is acceptable for delivery.

**Acceptance Review:** The Acceptance Review examines the equipment, documentation, and data that support verification. An acceptance review is accomplished to assure that equipment (at any level of assembly) is ready for transfer of ownership or custody or is ready for integration into a next-higher assembly.

**Acquisition:** The acquiring, by contract, of supplies or services through purchase or lease, whether the supplies or services are already in existence or must be created, developed, demonstrated, or evaluated. Acquisition begins at the point when the Agency needs are established and includes the description of requirements to satisfy the Agency needs, solicitation and selection of sources, awards on contracts, contract financing, performance, administration, technical and management functions directly related to the process of fulfilling Agency needs by contract.

**Adiabatic Compression Test (Pneumatic Impact Test):** A test used to determine the propensity of a material to ignite when subjected to rapid confined pressurization which does not allow the dissipation of heat. The Marshall Space Flight Center (MSFC) Adiabatic Compression Tester uses oxygen gas to rapidly pressurize a small sample of material, which is then used to determine if the heat generated by the pressurization is sufficient to ignite the material.

**Aerothermal Environment:** Aerothermodynamic heat transfer associated with radiation or convection induced by supersonic flight or rocket plume flow fields.

**Annual Operating Agreement:** A NASA Center management plan which defines customer requirements, processes, and resources required to meet customer requirements, and the metrics defining effectiveness and efficiency of project processes.

**Atomic Oxygen:** Atomic Oxygen is formed by solar ultraviolet (UV) radiation dissociating oxygen molecules into free oxygen atoms in the outer ionosphere from altitudes greater than 100 km. Atomic oxygen reacts with many materials, eroding organic materials and oxidizing metals.

**Autogenous Ignition Temperature Test** is used to determine the temperature at which liquids and solids will spontaneously ignite. The material must ignite without the application of spark or flame in a high pressure oxygen enriched environment.

**CAD Drawing:** Computer Aided Design of systems and components typically using Microstation for 2-D designs, Solid Edge for 3-D designs, and other software packages as required by the customer.

**Component End Item (CEI):** Defined as the sub-assemblies and/or components data for measuring contractor's cost and schedule performance on a NASA Acquisition Contract.

**Certification of Qualification (COQ):** Provides a uniform method for design qualification and certification of US components and subsystems.

**Clean Room:** An environmentally controlled area in which temperature, humidity, particulate, molecular species, process and personnel controls are implemented to insure hardware exposure environments result in an acceptable level of cleanliness.

**Commercial-Off-The-Shelf (COTS):** Commercially available products that can be purchased and integrated with little or no customization.

**Component:** An aggregate of hardware and/or software that can be characterized by one specification, is designed by a single activity to be functionally tested, and is verified as a unit.

**Contamination Control:** Responsibilities encompassing materials and contamination control during all phases of hardware development including design, manufacturing, assembly, test, transportation, launch site processing, on-orbit exposure, return and refurbishment if required. Control also includes reducing the risk of hardware/system failure due to molecular or particulate contamination. Contamination is a concern in a wide range of areas including critical bondlines, reactive fluids (e.g. liquid oxygen) compatibility, and sensitive optics. Contamination control also addresses applications of a variety of facilities and instrumentation capable of contaminant detection, identification, and monitoring. Material applications dealing with environments, including production facilities, clean rooms, and on-orbit exposure area also included. Contamination control personnel advise on contamination and foreign object debris control programs as well as clean room operations by compliance with imposed standards.

**Cost Performance Report:** This report consists of five formats containing data for measuring contractor's cost and schedule performance on a NASA Acquisition Contract.

**Critical Design Review (CDR):** The CDR discloses the complete system design in full detail, ascertains that technical problems and design anomalies have been resolved, and ensures that the design maturity justifies the decision to initiate fabrication/manufacturing, integration, and verification of mission hardware and software.

**Critical Processes (Quality Assurance):** Are processes where uniform high quality cannot be ensured by inspection alone.

**Critical Processes (Manufacturing Processes):** An operation, treatment, or procedure used as a step in manufacturing, testing, or inspection that, if improperly or inadequately performed, can have a significant performance, including safety, or schedule impact on new or unique processes, hardware designed for fracture control or processes identified on the Critical Items List (CIL) or as safety hazard control items.

**Demonstration Test Articles:** Test articles that are used to demonstrate a manufacturing and/or assembly process or technique.

**Design:** The approach that engineering disciplines use to specify how to create or do something. A successful design must satisfy a functional specification, conform to the limitations of the target medium, meets implicit or explicit requirements on performance and resource usage.

**Design Definition Document:** Provides a detailed description of the US at the end of a design analysis cycle.

**Design for Manufacturability:** The process of proactively designing products to (1) optimize all the manufacturing functions: fabrication, assembly, test, procurement, shipping, delivery, service, and repair, and (2) assure the best cost, quality, reliability, regulatory compliance, safety, time-to-market, and customer satisfaction.

**Dynamic Test:** Structural dynamics test technologies and facility capabilities are planned, developed, and applied to the requirements of structural analysis, flight criteria, and institutional

objectives. Primary emphasis is on: certification testing to simulated flight levels; development tests to determine structural performance characteristics; experimental tests to derive structural dynamic properties, expand test technologies, and support related technology development; and experimental tests to evaluate control system technologies and concepts to mitigate structural, thermal, and control system interactions for large space structures. Test control and response data processing includes time, frequency, and spatial domain analysis formatted for compatibility with analytical models, certification criteria, and experimental objectives. A wide range of skills provide the customer with a rapid response for structural dynamics testing needs. Test engineers provide overall management and coordination of test activities. These engineering services span a wide variety of dynamics testing: modal survey, vibration, acoustics, control dynamics, and pyrotechnic shock. Force inputs are provided through electromagnetic shakers, instrumented hammers, pyrotechnic charge devices, and forced air horn loaded drivers. Measured responses are obtained through piezoelectric accelerometers, high-speed video, dynamic strain gauges, electronic speckle pattern interferometry, and non-contact laser vibrometry. Test data are provided to support correlation of the experimental results with the analytical structural models and to qualify and certify flight hardware.

**Environmental Testing:** Usage of thermal vacuum, thermal humidity, and thermal altitude chambers to simulate conditions related to ascent, descent, and on-orbit environments as well as conditions related to shipping and ground storage environments.

**Equipment:** A generic term used to refer to hardware at any level-of-assembly from a component up through an integrated system.

**Evaluation Factors:** Factors by which a contractor's proposal will be evaluated to make a contract award.

**Export Control:** United States export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), and the Export Administration Regulations (EAR.)

**Export Licenses:** Licenses or other approvals from the Department of State or the Department of Commerce related to export of hardware, technical data, or software, or provides technical assistance to a foreign destination or "foreign person."

**Flammability Test:** A test method used to analyze the ignition potential of aerospace materials and small components, and to determine their burning characteristics. The MSFC Flammability test system is used to determine the ability of materials to resist ignition or to self-extinguish without transferring burning debris to adjacent materials.

**Fluid Dynamics:** Fluid mechanics or fluid dynamics is the study of the physical behavior of fluids. Fluids used at the cold flow facilities are liquids and gases - normally water and air. Testing of a fluid dynamic problem typically involves experimentally measuring various properties of the fluid, such as velocity, pressure, density, and temperature, as functions of space and time. The discipline has a number of sub disciplines, including aerodynamics (the study of gases) and hydrodynamics (the study of liquids). Fluid mechanics has a wide range of applications engineering and aerospace. For example, it is used to determine forces and moments on spacecraft, the mass flow of fluid through turbopumps, and prediction of aerodynamic environment in turbines.

**Full Time Equivalent (FTE):** A FTE for civil service personnel working for NASA.

**Government Furnished Equipment:** Equipment used during the project lifecycle that is not property of the contractor (machine tools, test equipment, furniture, vehicles,

and accessory and auxiliary items).

**Government Furnished Property:** Property in possession of the Government and subsequently made available to the contractor (facilities, materials, special tooling and special test equipment).

**Guidance Document:** A document that the Contractor will use as guidance in developing a Data Requirements Document (DRD) or a subsystem.

**Inputs:** A contractor provides "inputs" to a NASA document or study to allow NASA to produce a final product that may integrate the contractor's submission with submissions from various other sources. The format for inputs is defined in a contractual Data Requirements Document.

**Levitation (Electrostatic):** Charged specimens are maintained floating in the desired position between electrodes. Specimens are free from contact with any equipment or container. (Reference website: <http://esl.msfc.nasa.gov/>)

**Materials and Processes Technical Information System (MAPTIS):** MAPTIS is a NASA-wide materials database established for the purpose of recording and disseminating information about materials to help assure safe material selections for NASA produced space flight hardware.

**Mechanical Impact Test:** A test used to determine the propensity of a material to ignite when subjected to an impact by a free-falling weight. The MSFC Ambient and High-Pressure Mechanical Impact testers use a plummet to impact a disk of the sample material which is immersed in liquid or gaseous oxygen.

**Metrology:** Calibrated measurement or characterization of the fine dimensions, shape or surface roughness of precision manufactured hardware or optical components (lenses, mirrors and other specialized optics). Typically, government furnished equipment is provided for such tasks.

**Material Usage Agreement (MUA):** An agreement between the contractor and the government encompassing all agreed upon materials for use in the launch vehicle or spacecraft.

**National Center for Advanced Manufacturing (NCAM):** Located within Materials and Processes Laboratory, NCAM addresses the manufacturing requirements of space transportation systems. Through NCAM, partnerships between National Aeronautics and Space Administration (NASA), other government agencies, industry, and academia are formed that leverage assets and successfully meet the requirements of future aerospace systems-- systems that will ultimately provide safe and low-cost access to space.

**Organizational Issuances (OI):** Documents that provide procedures, instructions, etc., for internal use within an organization. OI's include Organizational Work Instructions (OWI's), procedures, plans, etc.

**Organizational Work Instructions (OWI):** Documents that provide detailed instructions stating how to perform specific Marshall Management System directed duties that apply to one or more Marshall Space Flight Center organizations, but not all. The OWI document type can be used when other document type designations do not apply.

**Oxygen Index Test:** A test used to determine the minimum oxygen concentration in a mixture of oxygen and nitrogen that will support flaming combustion of a material initially at room temperature.

**Past Performance:** Factual information about the performance of a contractor against the

performance requirements in past contracts.

**Performance Assessment Plan:** Describes the Contractor's overall approach to contract performance assessment and the implementation process for accomplishing metric evaluation and reporting.

**Performance Management Review:** Integrated review of cost, schedule, and technical performance on the contract.

**Plasma:** A quasi-neutral gas of charged and neutral particles which exhibit collective behavior.

**Promoted Ignition-Combustion Test:** Promoted Ignition-Combustion Test is a test used to determine the flammability of materials, mainly metals, in 50 to 10,000 psi gaseous oxygen (GOX), through the utilization of a promoter material that adds supplemental heat in order to initiate combustion. The MSFC Promoted Ignition-Combustion tester uses a metal promoter to initiate the combustion of a rod of the sample material.

**Prototype:** An original engineering unit/model utilized early in the design process to resolve design issues.

**Real-Time Support:** Level of support that has the personnel, tools, and location necessary for a timely response.

**Risk:** The uncertainty of attaining a performance outcome or result and is the function of the probability and the consequence of failing to attain the performance outcome or result.

**Risk Management:** The processes for identifying, assessing, mitigating, and tracking risks.

**Safety:** Freedom from those conditions that can cause death, injury, occupational illness, damage or loss of equipment or property, or damage to the environment.

**Space Act Agreement (SAA):** Specifically, SAAs are those "agreements whose authority is derived from NASA's "other transaction" authority of the NASA Space Act [of 1958]. It does not include Chiles Act (also known as the Federal Grant and Cooperative Agreement Act) cooperative agreements [31 U.S.C. § 6305] or grants [31 U.S.C. § 6304]. ...these "other transaction" agreements (referred to as SSA) also do not include procurement contracts. Therefore, procurement laws and regulations are not applicable." {""Agreement" defined in the broadest of contexts includes any agreement concluded under the authority of the NASA Space Act [of 1958] (contracts, leases, cooperative agreements, or other transactions). Generally, agreements establish a set of legally enforceable promises between NASA and another party to the agreement, requiring a commitment of NASA resources (including funding, services, equipment, expertise, information, or facilities to accomplish the objectives of the agreement."}

**Space Environmental Effects (SEE):** SEE provides valuable information to designers, engineers, and scientists on the behavior of materials in the space environment. Test facilities are utilized to evaluate materials optical, mechanical, and electrical property performance in atomic oxygen, ultraviolet radiation, charged particles, plasma, and thermal vacuum environments. Flight experiments such as those on the Long Duration Exposure Facility, the Passive Optical Sample Assembly, and the Optical Properties Monitor are also used for materials evaluation. The synergistic effects of these aspects of the space environment are still not completely understood and continue to be investigated. The data from these specialized test systems, combined with analytical results from material flight experiments, enable one to determine optimum materials for use on spacecraft.

**Statement of Work (SOW):** A document that expresses the tasks to be performed by the Contractor.

**Structural Test:** Structural strength testing is a simulation of a product's actual service life loads on a test article, the measurement and evaluation of the test article's response parameters, and the correlation of test data with analytical models. It involves imposing and controlling discrete loads, temperatures, and pressures to affect the interactive behavior of test articles to simulate actual service life conditions. Forcing functions are derived with hydraulic actuators, heating and/or cooling systems or fluids, and pressurization systems. Response characteristics are measured in terms of strain, temperature, and displacement. Measured data is processed to determine test article reactions to applied loads, to verify design concepts, and to correlate analytical models. Structural test systems can integrate audio, video, still photography, nondestructive evaluation techniques, and user-supplied measurement types into the overall test system.

A wide range of skills provide the customer with a rapid response for structural testing needs. Test engineers provide overall management and coordination of test activities. Instrumentation and load control engineers support test engineers in accomplishing all test requirements to ensure that all measurement and force loading profiles are properly addressed and performed. Mechanical technicians perform set-ups of mechanical reaction fixtures, hydraulic load application equipment, and test articles. Electrical technicians install and functionally verify (mechanically and electrically) test article instrumentation, strain gauges (including cryogenic applications), and other devices/sensors to measure displacements, loads, pressures, temperatures, etc.

**Test Support:** The diverse skills of the Environmental Test Facility (ETF) personnel can provide the customer with quick turnaround in test setup. Crafts include certified leak-check operators, certified welders, electricians, and machine shop operators. The ETF staff can develop the tooling and fixtures needed for tests such as cold plates and installation of special chamber feedthroughs.

**Thermal Altitude Testing:** Usage of test chambers to subject test articles to temperatures ranging from -70 degrees C to 190 degrees C and altitudes ranging from sea level to 100,000 feet.

**Thermal Humidity Testing:** Usage of test chambers to subject test articles to temperatures ranging from -70 degrees C to 190 degrees C and humidity ranging from 5% to 95%.

**Thermal Vacuum Stability (Outgassing) Test:** A test method used to evaluate the mass loss of materials being subjected to 125°C at a pressure less than  $5 \times 10^{-5}$  psi for 24 hours. The test primarily is used to determine the tendency of a non-metallic material to release volatile compounds.

**Thermal Vacuum Testing:** Usage of test chambers to subject test articles to temperatures ranging from -170 degrees C to 200 degrees C and pressures ranging from ambient to  $5 \times 10^{-8}$  torr.

**Toxic Offgassing (Toxicity) Test:** A test method used to determine the identity and quantity of volatile compounds which are given off from materials and flight hardware. The compounds are then evaluated for their potential impact on human health. The MSFC Toxicity test is conducted at 120°F in order to allow the test material to give off the maximum amount of volatile compounds.

**Vacuum Bakeout Facilities:** Thermal vacuum bakeouts are performed in the Sunspot, V4, V5, V6, V8, V9 and V11 Chambers. Vacuum bakeout cleans components before flights and prior to testing for certification to optical cleanliness specifications MSFC Specification 1238. Instrumentation includes thermocouples and ionization and convection pressure gauges.

**Validation:** Assessment of a set of requirements demonstrating that the requirements are feasible within allowable means (cost/schedule/technical capability), are verifiable, and if fully met, will produce a product that accomplishes the intended objectives. Proof that the product accomplishes the intended purpose. May be determined by a combination of test, analysis, and demonstration

**Verification:** Proof of compliance with specifications. May be determined by a combination of test, analysis, demonstration, and inspection.

**Work Breakdown Structure:** A product-oriented hierarchical division of the hardware, software, services, and data required to produce the program's/projects end product, structured according to the way the work will be performed, and reflective of the way in which program/project costs, schedule, technical and risk data are to be accumulated, summarized and reported.

**Work Year Equivalent (WYE):** Work year equivalent for contractors performing work on NASA contracts.

DOCUMENT

DATA PROCUREMENT

NO. 1163	ISSUE Revision F
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**NNM08AA20C**

CONTRACT/RFP

EXHIBIT NUMBER

**J-2**

ATTACHMENT NUMBER

**Marshall Engineering Technician and Trade  
Services (METTS)**

PROJECT/SYSTEM

***DATA PROCUREMENT DOCUMENT***

**InfoPro Corporation**

CONTRACTOR

**February 21, 2012**

DATE

National Aeronautics and  
Space Administration

National Aeronautics and Space Administration					DATA PROCUREMENT DOCUMENT		
<b>DOCUMENT CHANGE LOG</b>					NO.	ISSUE	
					1163	Revision F	
INCORPORATED REVISIONS				AS OF:		SUPERSEDING:	PAGE:
OUTSTANDING REVISIONS				02-21-12		02-28-11	1 of 3
AUTHORITY	PORTION AFFECTED - PAGE NO./NO.				REMARKS		
(DPD Revision)	INTRO	SGR	DRL	DRD			
Contract Mod. 0017				X	Added the following DRDs: 1163MA-010, Monthly Calibration Services Reports 1163MA-011, Monthly Valve and Component Shop (V&CS) Services Report 1163QE-002, Deficiency Corrective and Preventive Action Report 1163RM-001, Reliability Centered Maintenance (RCM) Plan Item 15.3: Added the following paragraph "In addition to the requirements above, the plan shall address identification and control of Government materials less than \$5,000 in WBS 3.6".		
Contract Mod. 0025				1163LS-001	Item 15.3: Added the following paragraph "2. In addition to the requirements in 15.3, paragraph 1, each quality element of the Government approved release of ANSI/NCSL Z540 as defined in NPD 8730.1, the roles and responsibilities of MPR 8730.5 shall be addressed to describe the philosophy and approach for implementation. A copy of the Calibration Quality Manual shall be submitted.		
				1163QE-001	Item 15.3: Deleted the following last paragraph "In addition to the requirements above, the plan shall address identification and control of Government materials less than \$5,000 in WBS 3.6".		
				1163MA-010	Item 15.3a: Deleted the following sentence "Quality Deficiencies and status for the reporting period". Added the following 15.3e through 15.3k: e. Calibration Content. f. Work Order Number. g. Equipment Control Number (ECN). h. Date Arrived at Calibration Laboratory. i. Estimated Completion Date. j. Actual Completion Date. k. Days Early/Days Late.		
Contract Mod. 0036			X	X	Deleted the following DRD due to the OPR cancellation: 1163CD-001, Contractor Information Technology Security Program Plan Item 15.3b: Changed "10 business days" to "20 business days". Item 15.3c: Changed "30, 60, and 90 calendar days" to "45 and 60 calendar days".		
				1163MA-010	Items Item 15.3d: Deleted in entirety.		
				X	Updated the following DRDs with the most current standard: 1163SA-001, Safety, Health, and Environmental (SHE) Plan 1163SA-003, Mishap and Safety Statistics Report		

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National Aeronautics and Space Administration					DATA PROCUREMENT DOCUMENT	
<b>DOCUMENT CHANGE LOG</b>					NO. 1163	ISSUE Revision F
INCORPORATED REVISIONS OUTSTANDING REVISIONS				AS OF: 02-21-12	SUPERSEDING: 02-28-11	PAGE: 2 of 3
AUTHORITY	PORTION AFFECTED - PAGE NO./NO.				REMARKS	
(DPD Revision)	INTRO	SGR	DRL	DRD		
Contract Mod. 0059				X	Added the following DRDs: 1163CD-003, Data Handling Plan 1163MA-012, Test Chronology Report 1163MA-013, Monthly Workforce Reports 1163MA-014, Propellants and Pressurants Management Plan 1163MA-015, Propellants and Pressurants Forecast Report 1163MA-016, Test Area Support Reports 1163MA-017, Employee Cross-training Report 1163MA-018, Maintenance Plan 1163SA-004, Air Emissions Reports	
				1163MA-004	Changed the title of the DRD from "Monthly Status Report" to "Monthly Cost and Status Report" and updated 15.3 Contents.	
				1136QE-001	Updated 15.3 Contents.	
				X	Updated the following DRDs with the most current standard: 1163SA-001, Safety, Health, and Environmental (SHE) Plan 1163SA-003, Mishap and Safety Statistics Report	
Contract Mod. 0072				X	Updated the following DRDs: 1163MA-015, Propellants and Pressurants (P&P) Forecast and Logistic Reports 1163SA-001, Safety, Health, and Environmental (SHE) Plan 1163SA-004, Air Emission Report  Deleted the following DRD: 1163RM-001, Reliability Centered Maintenance (RCM) Plan	
Contract Mod. 0094			X	X	Changed the title on DRD 1163MA-010 from "Monthly Calibration Services Reports" to "Monthly Metrology and Calibration Services Reports"	
				1163MA-010	Changed the title on DRD 1163MA-011 from "Monthly Valve Components Shop" to "Monthly Valve and Component Services Updated Item 6, Item 7 and Item 15.1. Deleted 15.3a through j and added new contents 15.3a through i.	
				1163MA-011	Updated Item 6, Item 7 and item 15.1. Deleted 15.3 a through c and added new contents 15.3a through j	
				1163SA-003	Item 11: Added "The contractor monthly safety statistics shall be sent to the MSFC Industrial Safety Branch or the Primary SMAR identified in Contract <b>Attachment J-20 - NASA MSFC Safety and Mission Assurance (S&amp;MA) Surveillance Plan Responsibilities and Requirements, Part A - General NASA Contract Quality Management System Monitoring and Surveillance, paragraph 2a</b> ".	
				1163QE-001	Updated Item 15.2 Applicable Documents and Item 15.3 Contents	
				1163QE-002	Updated Item 7 Description/Use and Item 15.1 Scope.	

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NOTE: The current revision is denoted by a vertical line in the outer margin adjacent to the affected text.		AS OF: 02-21-12	SUPERSEDING: 02-28-11	PAGE: 3 of 3	
INSERT LATEST REVISED PAGES. DISCARD SUPERSEDED PAGES.					
ITEM	PAGE	STATUS	ITEM	PAGE	STATUS
DPD	ALL	Revision F			

## 1.0 INTRODUCTION

1.1 Scope: Subject to the Rights in Data clause, this Data Procurement Document (DPD) sets forth the data requirements in each Data Requirements Description (DRD) and shall govern that data required by the DPD for the contract. The contractor shall furnish data defined by the DRD's listed on the Data Requirements List (DRL) by category of data, attached hereto, and made a part of this DPD. Such data shall be prepared, maintained, and delivered to NASA in accordance with the requirements set forth within this DPD. In cases where data requirements are covered by a Federal Acquisition Regulation (FAR) or NASA FAR Supplement (NFS) clause, that clause shall take precedence over the DPD, consistent with clause FAR 52.215-8.

1.2 DPD Description: This DPD consists of a Document Change Log, a Page Revision Log, a Table of Contents, an Introduction, a Statement of General Requirements, DPD maintenance procedures, a DRL, and the DRD's.

1.2.1 General Requirements: The general requirements, as specified in paragraph 2.0 of this DPD, prescribe those requirements applicable to the preparation, maintenance, and delivery of data that are better defined in aggregate than in the individual DRD's.

1.2.2 Data Requirements List (DRL): Throughout the performance of the contract, the DRL provides a listing by data category of the data requirements of the DPD.

### 1.2.3 Data Requirements Descriptions (DRD's)

1.2.3.1 Each data requirement listed on the DRL is given complete definition by a DRD. The DRD prescribes content, format, maintenance instructions, and submittal requirements.

1.2.3.2 For the purpose of classification and control, DRD's of this DPD are grouped into the following broad functional data categories:

<u>CATEGORY SYMBOL</u>	<u>DESCRIPTION</u>
CD	Contractual Data
CM	Configuration Management
LS	Logistics/Support
MA	Management
QE	Quality
SA	Safety

1.2.3.3 The symbols representing these data categories form part of the prefix of the DRD identification number. The first numerical characters reflect the DPD number.

1.2.3.4 To facilitate the usage and maintenance of the DPD, the DRD's have been sectionalized in accordance with the above data categories.

1.2.3.5 The DRD's are filed by data category and are in alpha-numeric sequence as listed on the DRL page (or pages) that precedes the DRD's.

1.2.4 Document Change Log (DCL) and Page Revision Log (PRL): The Document Change Log chronologically records all Revision Actions that pertain to the DPD. The Page Revision Log describes the current revision status of each page of the DPD and thus, at all times, provides its exact configuration.

1.2.5 DPD Maintenance Procedures: Maintenance procedures define the detailed methods to be employed in maintaining the DPD. Detailed maintenance procedures are specified in paragraph 3.0 of this DPD.

1.3 Data Types for Contractual Efforts: The types of data and their contractually applicable requirements for approval and delivery are:

<u>TYPE</u>	<u>DESCRIPTION</u>
1*	All issues and interim changes to those issues require written approval from the requiring organization before formal release for use or implementation.
2*	NASA reserves a time-limited right to disapprove in writing any issues and interim changes to those issues. The contractor shall submit the required data to NASA for review not less than 45 calendar days** prior to its release for use. The contractor shall clearly identify the release target date in the "submitted for review" transmittal***. If the data is unacceptable, NASA will notify the contractor within 45 calendar days** from the date of submission, regardless of the intended release date***. The contractor shall resubmit the information for reevaluation if disapproved. The submittal is considered approved if the contractor does not receive disapproval or an extension request from NASA within 45 calendar days**.
3	These data shall be delivered by the contractor as required by the contract and do not require NASA approval. However, to be a satisfactory delivery, the data shall satisfy all applicable contractual requirements and be submitted on time.
4	These data are produced or used during performance of the contract and are retained by the contractor. They shall be delivered only when NASA requests in writing and shall be delivered in accordance with the instructions in the request. The contractor shall maintain a list of these data and shall furnish copies of the list to NASA when requested to do so.
5	These data are incidental to contract performance and are retained by the contractor in those cases where contracting parties have agreed that formal delivery is not required. However, the Contracting Officer or the Contracting Officer's Representative shall have access to and can inspect this data at its location in the contractor's or subcontractor's facilities, or in an electronic database accessible to the Government.
*	Note: Type 1 and Type 2 data may be placed under NASA configuration management control when designated by NASA. CM control requires the contractor to submit Type 1 and Type 2 data updates through Engineering Change Proposals (ECPs).
**	Note: This time limit may be tailored for individual DRD's to meet the requirements of the procuring activity.
***	Note: If the contractor does not identify a release target date or if the intended release date is shorter than 45 calendar days from the date of submission, the 45 calendar days review cycle stands (or the tailored Type 2 time limitation for the specific procurement).

## 2.0 STATEMENT OF GENERAL REQUIREMENTS

2.1 Applicable/Reference Documents: Documents included as applicable documents in this DPD are the issue specified in the Performance Work Statement (PWS), and form a part of the DPD to the extent specified herein. Applicable documents listed in Item 15.2 of a DRD are applicable only to the preparation of the deliverable documentation described by that DRD.

References to documents other than applicable documents in the data requirements of this DPD may sometimes be utilized, and shall be indicated in 13. Remarks of the DRD. These do not constitute a contractual obligation on the contractor. They are to be used only as a possible example or to provide related information to assist the contractor in developing a response to that particular data requirement.

## 2.2 Subcontractor Data Requirements

2.2.1 The contractor shall specify to subcontractors and vendors, if any, the availability source of all data required for the satisfactory accomplishment of their contracts. The contractor shall validate these requirements for documents when appropriate; where the requirement concerns other contractor data, the contractor shall provide his subcontractor or vendor with the necessary documents. All such requests shall be accomplished under the auspices of the contractor.

2.2.2 Reference to subcontractor data in the contractor's responses is permissible, providing the references are adequate and include such identification elements as title, number, revision, etc., and a copy of the referenced data is supplied with the response document at time of delivery to NASA.

## 2.3 Data Distribution, Format, Data Restriction Marking, and Transmittal

2.3.1 Distribution: Distribution of required documentation shall be in quantities determined by the Contracting Officer. Recipient names and email (if applicable) addresses shall be noted on a separate distribution list to be furnished by the Contracting Officer. The Contracting Officer's letter may include other information pertinent to delivery of data, as required.

### 2.3.2 Format

2.3.2.1 Electronic Format: Electronic submission of data deliverables is required. Electronic deliverables shall be printable. Data deliverables shall be delivered to NASA in the format specified below unless a specific format is required by a DRD. Data submittals shall consist of a single Adobe Acrobat PDF file and the native format electronic file(s). The preferred native formats include Microsoft Word, Excel, PowerPoint or CAD drawing plot file, as appropriate. Where a single native format file is not possible, multiple files may be integrated into a single ZIP file for submission. The organization of the contents of the integrated ZIP file shall be made readily apparent to the reader, and each file within the integrated product shall be clearly identifiable and traceable within the organization of the integrated product. If files are fragmented, file names shall be labeled logically and contiguously, and the files shall be easily reassembled or merged (e.g. 1 filename, 2 filename, 2a filename, etc.). The software versions shall be confirmed prior to submittals.

2.3.2.2 Hardcopy Format: In addition to the electronic submittal, one hardcopy package of specific data deliverables shall be delivered to the NASA Contracting Officer for the Government contract file. This requirement is indicated in Item 15.4, Format of each DRD. The hardcopy package shall consist of the contractor's Transmittal Memo and one copy of the data deliverable.

### 2.3.3 Data Restriction Marking

2.3.3.1 Data Restriction Determination and Marking Requirements: The contractor shall determine the data restriction that applies to each data deliverable and mark the data restriction on the data coversheet, or indicate the data restriction in the data transmittal package if the data format precludes identification of data restriction directly in the data. The contractor shall make a determination for each individual data deliverable item, and shall not apply a default or blanket data restriction marking to all data deliverables (e.g., "data may be export restricted"). If NASA does not agree with the contractor applied data restriction, the NASA Contracting Officer shall return the data to the contractor, cancel the markings, or ignore the markings consistent with the procedures set forth in the "data rights" clause(s) contained in the contract.

2.3.3.2 Data Restriction Categories and Marking Statements: The contractor shall consider the following data restriction categories, as a minimum, and utilize specified marking statements.

If data delivered under this contract is subject to the International Traffic in Arms Regulations (ITAR), the data shall contain an "ITAR Notice" as follows:

#### **International Traffic in Arms Regulations (ITAR) Notice**

This document contains information which falls under the purview of the U.S. Munitions List (USML), as defined in the International Traffic in Arms Regulations (ITAR), 22 CFR 120-130, and is export controlled. It shall not be transferred to foreign nationals, in the U.S. or abroad, without specific approval of a knowledgeable NASA export control official, and/or unless an export license/license exemption is obtained/available from the United States Department of State. Violations of these regulations are punishable by fine, imprisonment, or both.

If data delivered under this contract is subject to the Export Administration Regulations (EAR), the data shall contain the "EAR Notice" as follows:

#### **Export Administration Regulations (EAR) Notice**

This document contains information within the purview of the Export Administration Regulations (EAR), 15 CFR 730-774, and is export controlled. It may not be transferred to foreign nationals in the U.S. or abroad without specific approval of a knowledgeable NASA export control official, and/or unless an export license/license exception is obtained/available from the Bureau of Industry and Security, United States Department of Commerce. Violations of these regulations are punishable by fine, imprisonment, or both.

If the contract contains FAR 52.227-14 *Alternate II*, the "Limited Rights Notice" may be applicable to data (other than computer software) delivered under this contract.

If the contract contains FAR 52.227-14 *Alternate III*, the "Restricted Rights Notice" may be applicable to computer software delivered under this contract.

If the contract contains FAR 52.227-20, the "SBIR Rights Notice" may be applicable to SBIR data delivered under this contract.

If the contract contains NFS 1852.237-73, a sensitive information legend may be applicable to information delivered under this contract.

In accordance with the applicable data clause (e.g., FAR 52.227-14(c) or FAR 52.227-20(c)), the contractor may be able to assert a copyright claim in data delivered under this contract. When claim to copyright is made, the Contractor shall affix the applicable copyright notices of 17 U.S.C. 401 or 402 and acknowledgment of Government sponsorship (including contract number) to the data when such data are delivered to the Government.

#### 2.3.4 Transmittal

- 2.3.4.1 Data shall be transmitted to NASA by email, CD or DVD, hardcopy, or other mechanism agreed to by the Contracting Officer, COTR, and Project representatives who are responsible to receive, index, and store the data deliverables.
- 2.3.4.2 If email is used to transmit data deliverables, the email size shall be 10 Megabytes or less to ensure receipt by the NASA email servers. Encrypted email format shall be used to transmit data which has been judged sensitive by the contractor (e.g., export controlled, limited rights data, SBIR, restricted computer software, copyrighted, etc.).
- 2.3.4.3 Data Transmittal Package: Each data transmittal package shall include:
- a. Transmittal memorandum that specifies the meta-data below for each data transmittal:
    1. Contract number.
    2. Data Requirements Description (DRD) number.
    3. DRD data type (specified in Item 3 on the DRD).
    4. Submission date or milestone being satisfied.
    5. Document number and revision.
    6. Document title.
    7. File names of all files being delivered; file naming convention shall clearly identify the document being delivered.
    8. Distribution (as defined by the Contracting Officer's letter).
    9. Requested response date.
    10. Contractor assigned data restriction (export controlled, limited rights data, SBIR, restricted computer software, copyrighted, etc.) if not marked on data.
    11. NASA Records Retention Schedule (NRRS) number, if applicable. (See NPR 1441.1, NASA Records Retention Schedules).
  - b. Printable electronic files or hardcopy data.
- 2.3.5 Electronic data deliverables should be transmitted directly to the MSFC Repository through the Digital Asset Manager web interface. Instructions for electronic data submittals can be found at <http://avmcc.msfc.nasa.gov/repository/index.php>. Document submitters must register for a Documentum user account through the NASA Account Management System (NAMS). Computer-Aided Design (CAD) drawings shall be submitted in the original native vector, Hewlett-Packard Graphic Language (HPGL), and raster image formats.

- 2.4 Printing: All printing, duplicating, or binding shall be in accordance with NFS 1852.208-81, Restrictions on Printing and Duplicating. Printing of formal reports and Type 1 and 2 data in book format shall be in accordance with the following general specifications:
- Method of reproduction – offset/xerography.
  - Finished size – 8 1/2" X 11".
  - Paper – 20-pound opaque bond.
  - Cover – Litho cover stock.
  - Pages shall be printed on both sides; blank pages shall be avoided when possible.
  - Oversize pages shall be avoided when possible, but if necessary shall be folded to 8 1/2" X 11".
  - Binding shall be the most economical method commensurate with the size of the report and its intended use.
- 2.5 Contractor's Internal Documents: The contractor's internal documents shall be used to meet the data requirements of this DPD unless a specific format is required by the applicable DRD.
- 2.6 Document Identification: Type 1 and 2 documents published by the contractor and submitted in response to the data requirements of this DPD shall be identified within an organized identification numbering system prescribed to NASA by the contractor and, if applicable, as approved by NASA. For all data types, the document number, change legend, date, and title constitute the minimum identification of the specific document and shall appear on the cover and title page. The contract number shall also appear on the cover and title page as separate markings. The originator and organization shall be included on the title page. The document number, change legend, and date shall appear on each page of the document. In the front matter of each document, identify the DPD number and applicable DRD number(s) required for document preparation. Successive issues or revisions of documents shall be identified in the same manner as the basic issue and shall have appropriate change identification. Drawings and ECP's are excluded from the marking provisions of this paragraph. All Type 1 documentation, excluding configuration management requirements, shall be marked "PRELIMINARY PENDING NASA APPROVAL," and once approved shall be reissued with "APPROVED BY NASA" and the date and approval authority annotated on the cover.
- 2.7 Reference to Other Documents and Data Deliverables in Data Submittals: All referenced documents shall be made readily available to the cognizant NASA organization upon request. The contractor should make sure that the references are available to NASA in a manner which does not incur delays in the use of the response document. Reference may be made, within one data submittal, to other data submittals delivered in response to this DPD in those cases where the data required by one DRD may have been delivered by the contractor in response to another DRD. The reference to previously-submitted data shall include the applicable DRD number, data submittal version date, and location within the referenced document.
- 2.8 Maintenance of Type 1 Document Submittals
- 2.8.1 Revisions of Type 1 documentation may be accomplished either by individual page revision or by a complete reissue of the document identified in accordance with requirements of 2.7 above, with the exception of drawings (which shall be revised in accordance with contract configuration management requirements).
- 2.8.2 Individual page revisions shall be made as deemed necessary by the contractor or as

directed by the Contracting Officer.

- 2.8.3 A Type 1 document shall be completely reissued when, in the opinion of the contractor and/or NASA, the document has been revised to the extent that it is unusable in its present state, or when directed by the Contracting Officer. When complete reissues are made, the entire contents of the document shall be brought up to date and shall incorporate revised pages. All revisions shall be recorded. A revision log shall identify complete reissues except for periodic reports and documents which are complete within themselves as final.
- 2.8.4 Changes of a minor nature to correct obvious typing errors, misspelled words, etc., shall only be made when a technical change is made, unless the accuracy of the document is affected.
- 2.8.5 All revised pages shall be identified by a revision symbol and a new date. Each document shall contain a log of revised pages that identify the revision status of each page with the revision symbol. This list shall follow the table of contents in each document. The line or lines revised on a given page shall be designated by the use of vertical line in the margin of the page, and the change authority shall be indicated adjacent to the change.
- 2.8.6 Contractor Type 1 documents shall not be submitted containing pen and ink markups which correct, add to, or change the text, unless schedule problems exist and approval is obtained in writing from the Contracting Officer. Such markups, however, shall not exceed 20 percent of the page content and shall be acceptable provided that the reproduced copies are legible. In addition, hand-drawn schematics, block diagrams, data curves, and similar charts may be used in original reports in lieu of formally prepared art work, as long as legibility of copies is not impaired. Acceptability shall be determined by the Contracting Officer.

### 3.0 DPD MAINTENANCE PROCEDURES

- 3.1 NASA-Initiated Change: New and/or revised data requirements shall be incorporated by contract modification to which the new or revised portion of the DPD shall be appended. The contractor shall notify the Contracting Officer in the event a deliverable data requirement is imposed and is not covered by a DRD, or when a DRD is changed by a contract modification and for which no revision to DPD is appended. In such cases, the contractor shall submit the requested changes to NASA for approval. See paragraph 3.3.1 for change procedures.
- 3.2 Contractor-Initiated Change: Contractor-proposed data requirements, or proposed changes to existing requirements shall be submitted to NASA for approval.
- 3.3 DPD Change Procedures
- 3.3.1 Changes to a contractual issue of this DPD shall be identified by NASA on the Document Change Log and Page Revision Log. The actual revised material on the DPD page shall be identified by placing a heavy vertical line in the right-hand margin extending the entire length of the change. In addition, the numerical control number of the contractual direction authorizing the change shall be placed adjacent to the vertical revision line. These revision identifiers shall be used to reflect the current revision only; any previous symbols on a page shall be deleted by the current revision.

- 3.3.2 The date of the contractual direction paper, e.g., Change Order, Supplemental Agreement, or Contracting Officer's letter shall be entered under the "Status " column of the Page Revision Log adjacent to the affected page or DRD number, and in the "as of" block. The date that was in the "as of" block shall be entered in the "Superseding" block.
- 3.3.3 The Document Change Log entitled "Incorporated Revisions" shall be changed to indicate the number, portions affected, and associated Supplemental Agreement number, if applicable.
- 3.3.4 The Document Change Log entitled "Outstanding Revisions" is changed periodically to indicate outstanding Change Orders and Contracting Officer notification letters.
- 3.4 DPD Reissues
- 3.4.1 When conditions warrant, the DPD shall be reissued by NASA for each contract modification that affects the DPD and shall supersede the existing DPD in its entirety. Reissues shall be issued by contractual direction.
- 3.4.2 All revision dates shall remain in the Date Revised block on all DRDs. The issue symbol, which shall commence with "A" and progress through "Z," shall be entered in the DPD identification block of each DRD page of the DPD.

**MARSHALL ENGINEERING TECHNICIAN AND TRADES SERVICES (METTS)**

**DATA REQUIREMENTS LISTS**

<u>DRD</u>	<u>DATA TYPE</u>	<u>TITLE</u>	<u>OPR</u>
CD - Contractual Data			
<del>1163CD-001</del>	<del>2</del>	<del>Contractor Information Technology Security Program Plan</del>	<del>IS10</del>
1163CD-002	3	Technology Reports	ED10
1163CD-003	3	Data Handling Plan	ET02
CM - Configuration Management			
1163CM-001	1	Acceptance Data Package	ED10
1163CM-002	2/3	Functional Configuration/Physical Configuration Audit Documentation	ED10
LS -Logistics			
1163LS-001	2	Government Property Management Plan	AS41
MA - Management			
1163MA-001	1	Management Plan	ES01
1163MA-002	1	Task Order Plan (TOP)	ES01
1163MA-003	3	Financial Management Report (533M)	CS40
1163MA-004	3	Monthly Cost and Status Report	ES01
1163MA-005	3	Badged Employee and Remote IT User Listing	AS50
1163MA-006	3	Contractor Employee Clearance Document	AS50
1163MA-007	3	Position Risk Designation for Non-NASA Employee	AS50
1163MA-008	3	Monthly and Semi-Annually Performance Reports	ES01
1163MA-009	2	Organizational Conflict of Interest (OCI) Avoidance Plan	PS21
1163MA-010	3	Monthly Metrology and Calibration Services Report	ET02
1163MA-011	3	Monthly Valve and Component Services Report	ET02
1163MA-012	3	Test Chronology Report	ET02
1163MA-013	3	Monthly Workforce Reports	ET02
1163MA-014	1	Propellants and Pressurants (P&P) Management Plan	ET02
1163MA-015	3	Propellants and Pressurants (P&P) Forecast and Logistics Reports	ET02
1163MA-016	3	Test Area Support Report	ET02
1163MA-017	3	Employee Cross-training Report	ET02
1163MA-018	1	Maintenance Plan	ET02
QE - Quality			
1163QE-001	1	Quality Management System Plan	QD40
1163QE-002	3	Deficiency Corrective and Preventive Action Report	ET02
RM – Reliability and Maintainability			
<del>1163RM-001</del>	<del>1</del>	<del>Reliability Centered Maintenance (RCM) Plan</del>	<del>ET02</del>
SA - Safety			
1163SA-001	2	Safety, Health, and Environmental (SHE) Plan	AS10/QD12
1163SA-002	1	Personnel Certification Plan	QD12/QD21 ED01
1163SA-003	3	Mishap and Safety Statistics Report	QD12
1163SA-004	3	Air Emission Reports	AS10

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                      **ISSUE:** Revision F                      2. **DRD NO.:** **1163CD-002**
3. **DATA TYPE:** 3                      4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/3
6. **TITLE:** Technology Reports
7. **DESCRIPTION/USE:** Provides NASA with technical information concerning any invention, discovery, improvement, or innovation made by a contractor in the performance of work under this contract for the purpose of disseminating this information to obtain increased use. Also, to provide NASA with data to review for possible patentable items.
8. **OPR:** ED10                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:**  
Technology Reporting Plan: Upon Contracting Officer's request.  
Disclosure of Invention and New Technology (NASA Form 1679): Within 2 months of identification of reportable item.  
Interim NASA New Technology Summary Report (NTSR) Form: 12 months from the date of the contract.  
Final NASA New Technology Summary Report (NTSR) Form: Immediately or within three months after completion of contracted work. Final Payment is contingent upon submission of the Final NTSR.
12. **SUBMISSION FREQUENCY:**  
Technology Reporting Plan: Upon Contracting Officer's request.  
Disclosure of Invention and New Technology (NASA Form 1679): For each reportable item.  
Interim NASA New Technology Summary Report (NTSR) Form: Every 12 months.  
Final NASA New Technology Summary Report (NTSR) Form: Immediately or within three months after completion of contracted work. Final Payment is contingent upon submission of the Final NTSR.
13. **REMARKS:** Copies of NASA Form 1679 and the NASA New Technology Summary Report (NTSR) Form (Interim and Final) may be obtained and/or filled out at: <http://ntr.ndc.nasa.gov/>. These forms may also be obtained from the New Technology Representative (mailto: Carolyn.E.McMillan@nasa.gov).
14. **INTERRELATIONSHIP:** PWS paragraph 1.2.3
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Technology Reports include technical detail as is necessary to identify and fully describe a "Reportable Item". Per NFS 1852.227-70, "Reportable Item" means any invention, discovery, improvement, or innovation of the contractor, whether or not the same is or may be patentable or otherwise protectable under Title 35 of the United States Code, conceived or first actually reduced to practice in the performance of any work under this contract or in the performance of any work that is reimbursable under any clause in this contract providing for reimbursement of costs incurred prior to the effective date of this contract.
- 15.2 **APPLICABLE DOCUMENTS:**  
NFS 1852.227-70                      *New Technology Clause*

## DRD Continuation Sheet

TITLE: Technology Reports

DRD NO.: **1163CD-002**

DATA TYPE: 3

PAGE: 2/3

15. **DATA PREPARATION INFORMATION (CONTINUED):**

15.3 **CONTENTS:** The Technology Reports consist of:

- a. Disclosure of Invention and New Technology (Including Software): In accordance with NFS 1852.227-70 (e)(2), the disclosure to the agency shall be in the form of a written report and shall identify the contract under which the reportable item was made and the inventor(s) or innovator(s). It shall be sufficiently complete in technical detail to convey a clear understanding, to the extent known at the time of the disclosure, of the nature, purpose, operation, and physical, chemical, biological, or electrical characteristics of the reportable item. The disclosure shall also identify any publication, on sale, or public use of any subject invention and whether a manuscript describing such invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the agency, the Contractor shall promptly notify the agency of the acceptance of any manuscript describing a subject invention for publication or of any on sale or public use planned by the Contractor for such invention. This reporting requirement may be met by completing NASA Form 1679 (latest revision) in hardcopy or online at: <http://ntr.ndc.nasa.gov/>. Use of this form or the online system is preferred; however, if the form is not used the following information should be provided in order to meet the reporting requirement:
  1. Descriptive title.
  2. Innovator(s) name(s), title(s), phone number(s), and home address(es).
  3. Employer when innovation made (name and division).
  4. Address (place of performance).
  5. Employer status (e.g., Government, college or university, non-profit organization, small business firm, large entity).
  6. Origin (e.g., NASA grant number, NASA prime contract number, subcontractor, joint effort, multiple contractor contribution, other).
  7. NASA Contracting Officer's Technical Representative (COTR).
  8. Contractor/grantee New Technology Representative.
  9. Brief abstract providing a general description of the innovation:
    - (a) Description of the problem or objective that motivated the innovation's development.
    - (b) Technically complete and easily understandable description of innovation developed to solve or meet the objective.
    - (c) Unique or novel features of the innovation and the results or benefits of its application.
    - (d) Speculation regarding potential commercial applications and points of contact (including names of companies producing or using similar products).
  10. Additional documentation.
  11. Degree of technological significance (e.g., modification of existing technology, substantial advancement in the art, major breakthrough).
  12. State of development (e.g., concept only, design, prototype, modification, production model, used in current work).
  13. Patent status.
  14. Dates or approximate time period during which this innovation was developed.
  15. Previous or contemplated publication or public disclosure including dates.
  16. Answers to the following questions (for software only):
    - (a) Using outsiders to beta-test code? If yes, done under beta-test agreement?
    - (b) Modifications to this software continue by civil servant and/or contractual agreement?
    - (c) Previously copyrighted (if so, by whom?)?
    - (d) Were prior versions distributed (if yes, supply NASA or Contractor contract)?
    - (e) Contains or is based on code owned by a non-federal entity (if yes, has a license for use been obtained?)?
    - (f) Has the latest version been distributed without restrictions as to use or disclosure for more than one year (if yes, supply date of disclosure)?
  17. Name(s) and signature(s) of innovator(s).

**DRD Continuation Sheet**

TITLE: Technology Reports

DRD NO.: **1163CD-002**

DATA TYPE: 3

PAGE: 3/3

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**15. DATA PREPARATION INFORMATION (CONTINUED):**

- b. Interim NASA New Technology Summary Report (NTSR): This report shall consist of a listing of reportable items for the reporting period or certification that there are none. This report shall also contain a list of subcontracts containing a patent rights clause or certification that there were no such subcontracts. Completion of the Interim NTSR shall satisfy this reporting requirement. Use of the form utilizing the online system at <http://ntr.ndc.nasa.gov/> is preferred; however an alternate format is acceptable provided all required information is provided.
- c. Final NASA New Technology Summary Report (NTSR): This report shall consist of a comprehensive list of all reportable items for the contract duration or certification that there are none. This report shall also contain a list of subcontracts containing a patent rights clause or certification that there were no such subcontracts. Completion of the Final NTSR shall satisfy this reporting requirement. Use of the form utilizing the online system at <http://ntr.ndc.nasa.gov/> is preferred; however an alternate format is acceptable provided all required information is provided.
- d. Subcontracts: The contractor shall provide copies of subcontracts containing a patent rights clause upon Contracting Officer's request.

- 15.4 **FORMAT:** The Disclosure of Invention and New Technology (Including Software) report may use NASA Form 1679 (latest version) or the online system at: <http://ntr.ndc.nasa.gov/>, or provide sufficient information to meet the reporting requirement.

The interim and final NASA New Technology Summary Reports may use the NTSR Form (Interim or Final whichever is applicable) utilizing the online system at: <http://ntr.ndc.nasa.gov/>, or provide sufficient information to meet the reporting requirement.

- 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1136      **ISSUE:** Revision F
2. **DRD NO.:** **1163CD-003**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Data Handling Plan
7. **DESCRIPTION/USE:** To describe and outline Contractor methods used in assuring proper handling and control of sensitive and proprietary government and third party data.
8. **OPR:** ET02      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Sixty (60) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Revise as required
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Data Handling Plan delineates the Contractor's policy, process, and procedures used to assure the proper handling of sensitive and proprietary data. Data handling includes but is not limited to government or third party data access, use, disclosure, reproduction, transmission, storage and disposal activities.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Data Handling Plan shall delineates the Contractor's policy, process, and procedures used to assure the proper handling of sensitive and proprietary data. Data handling shall include but is not limited to government or third party data access, use, disclosure, reproduction, transmission, storage and disposal activities
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** Changes shall be incorporated by change page or by complete reissue.

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163CM-001**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/2
6. **TITLE:** Acceptance Data Package
7. **DESCRIPTION/USE:** To provide the documentation needed by MSFC to establish the acceptability of equipment/software for deliverable products.
8. **OPR:** ED10      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Preliminary two weeks prior to each Acceptance Review (AR)
12. **SUBMISSION FREQUENCY:** Final with delivery of each Configuration Item (CI)
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 2.4.10
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Acceptance Data Package (ADP) contains the elements of documentation required to establish the acceptability of DEI products as requested in each customer order.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:**
  - a. The Acceptance Data Package shall include:
    1. Copy of Visual Manufacturing™ customer order and final work order.
    2. Copy of DD Form 250.
    3. Original work orders that specify Government mandatory inspection points (GMIPs).
    4. Final Deliverable End Item (DEI) configuration report/certification.
    5. DARs (waivers/deviations) and contractor MRB action discrepancy records.
    6. MSFC internal customer supplied product (ICPS) documentation submitted with articles and materials supplied by the customer, i.e. NASA MSFC parts tags (MSFC Form 312), log books (MSFC Form 3473), Temporary Installation Record (MSFC Form 4340), temporary red streamers (MSFC Tag 16) or other NASA Center or customer documentation.
    7. Generated log books when specified as an engineering requirement.
    8. Temporary Installation Record (MSFC Form 4340) as applicable for deliverable hardware products with attached Red Streamers (MSFC Tag 16).
  - b. Additional ADP to support specific customer requirements shall be specified on the customer order, which may include but are not limited to:
    1. Drawings, engineering orders, and engineering parts list.
    2. Results and draft of oven/furnace temperature survey.
    3. Results of processed representative sample specimens (hardness values and sketch) as required.
    4. Hardness values of each heat treated part, indicating the part number, serial number, and hardness.

**DRD Continuation Sheet**

TITLE: Acceptance Data Package

DRD NO.: **1163CM-001**

DATA TYPE: 1

PAGE: 2/2

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

5. Material certification – chemical and/or physical test results.
6. Nondestructive Evaluation (NDE) results and personnel certification.
7. Welder's certification/weld procedures.
8. Contractor miscellaneous inspection records.
9. Copy of work orders.
10. Alignment and Center of Gravity (CG) data.
11. Limited life data.
12. Cleanliness data.
13. Assembly integration data.

15.4 **FORMAT:** Contractor format is acceptable.15.5 **MAINTENANCE:** The ADP shall be maintained current for five (5) years.

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163CM-002**
3. **DATA TYPE:** 2/3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/4
  
6. **TITLE:** Functional Configuration/Physical Configuration Audit Documentation
  
7. **DESCRIPTION/USE:** To support the Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA). The FCA is an audit to verify performance of the CI against approved configuration documentation. The PCA is an audit of the configuration documentation and quality control records to ensure the as-built or as-coded configuration is defined in the documentation.
  
8. **OPR:** ED10                      9. **DM:** ES01
  
10. **DISTRIBUTION:** See Attachment 2
  
11. **INITIAL SUBMISSION:** See Attachment 2
  
12. **SUBMISSION FREQUENCY:** Per configuration audit
  
13. **REMARKS:** MSFC will document audit planning and provide it to the contractor prior to the audit.
  
14. **INTERRELATIONSHIP:** PWS paragraph 2.4.10
  
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** Functional Configuration/Physical Configuration Audit Documentation contains the required documentation necessary to support the configuration audit for a configuration item (CI).
- 15.2 **APPLICABLE DOCUMENTS:**  
MSFC-STD-3394      *Standard for Contractor Configuration Management MSFC Programs/Projects*
- 15.3 **CONTENTS:** Detailed content requirements shall be specified by MSFC to include Test and other required data for the FCA shall be that collected from the test of the configuration of the item that is to be formally accepted. The Physical Configuration Audit (PCA) is an audit to verify that the as-built configuration reflects the required physical characteristics documented in the as-designed configuration. Configuration and quality control records and other documents defining the as-built or as-coded configuration is defined in the documentation shall be provided.

MSFC-STD-3394 provides guidelines on documentation required for the FCA and PCA. See Attachment 1 for documentation required for the audits.

Additional documentation requirements to be provided are:

- a. **Agenda** - The agenda shall specify the date, time and place for the scheduled audit, specific review items, supporting documentation, and key participants. Submit approved copies at the review. See Attachment 2.
- b. **Presentation Charts** - Presentation charts shall be submitted at the start of the audit.

## DRD Continuation Sheet

TITLE: Functional Configuration/Physical Configuration Audit      DRD NO.: **1163CM-002**  
Documentation

DATA TYPE: 3

PAGE: 2/4

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

They shall summarize the details contained in the data package and identify compliance with the contract requirements. See Attachment 2 for distribution and availability of data.

- c. Plan – A plan shall be submitted prior to initiating the audit, stating configuration items to be reviewed; data required to perform the review; how open actions are tracked; defining success criteria; and providing for formal certification of the audit. The plan shall also define extent of contractor and government participation in the review.
- d. Minutes - The minutes shall contain a description of the audit with sufficient detail to enable the audit to be made a matter of record. The minutes shall include the presentation charts, a listing of Findings, action items with actionee and suspense (closure) data, and identification of the documents which describe the approved baseline established at the conclusion of the PCA. See Attachment 2 for distribution and availability of data.
- e. Findings - showing action items, actionees, suspense dates and closure status shall be submitted. See Attachment 2 for distribution and availability of data.

15.4 **FORMAT:** Contractor format is acceptable.

15.5 **MAINTENANCE:** As required to correct errors and to maintain findings closure status.

**Configuration Audit Required Data****Documentation required for FCA**

(As applicable)

- Specifications.
- Drawings and parts list.
- ECPs and DARs incorporated and pending.
- Specification and drawing tree.
- Fracture control plan.
- Structural dynamics, analyses, loads, and models documentation (updated).
- Materials Usage Agreement (MUAs).
- Material Identification Usage List (MIUL).
- Certification of Qualification(s) (COQ's).
- Verification procedures and requirements.
- Complete list of successfully accomplished tests and test results.
- Complete list of successful tests if detailed test data are not recorded.
- Complete list of tests required but not performed.
- Software verification data.
- Software development documents.
- Software version description.
- Critical Design Review (CDR) RIDs and dispositions.
- Mission constraints.
- Nonconformance reports.
- Interface control drawings/documents.
- Hazard analysis/risk assessment.
- Test plans and procedures.
- Test reports.
- Verification closures.
- Verification tracking log.
- Analysis reports.
- ALERTS tracking log.

**Documentation required for the PCA**

(As applicable)

- Final version of all specifications.
- Product drawings and parts list.
- Configuration accounting and status reports.
- Final version of all software documents.
- Final version of software version description document.
- Copy of all FCA findings for each CI.
- List of approved and outstanding ECPs and DARs.
- Copies of ECPs and DARs as requested at the audit.
- Drawing and specification tree.
- Indentured parts list/as-designed configuration definition.
- As run test procedures (when applicable, include any test discrepancy records).
- Copy of parts tags or verification closure for verification items verified by inspection method.
- Manufacturing and inspection (build) records.
- Inspection records or inspection verification closures.
- As-built electronic data.
- Discrepancy Reports (DR's).
- Log Books.

**ATTACHMENT 2**

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FCA/PCA Documentation

Distribution and Availability of Data

Document	Data Type	FCA Copies/Availability	PCA Copies/Availability
Agenda	2	One/15 days prior to audit, Approved copies at audit	One/15 days prior to audit, Approved copies at audit
Data Package	3	One/Two weeks prior to audit	One /Two weeks prior to audit
Presentation Charts	3	One for each attendee at audit	One for each attendee at audit
Minutes	2	One at audit/copy to each attendee within two weeks	One at audit/one to each attendee within two weeks
Findings (generated at Reviews)	2	Provided as hard copy or electronically per the project specific Audit Plan.	Close out to be as specified in the project specific Audit Plan.

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163                      **ISSUE:** Revision F                      2. **DRD NO.:** **1163LS-001**  
 3. **DATA TYPE:** 2                      4. **DATE REVISED:** 02-21-12  
 5. **PAGE:** 1/1
6. **TITLE:** Government Property Management Plan
7. **DESCRIPTION/USE:** To describe the method of controlling and managing Government property and materials.
8. **OPR:** AS41                      9. **DM:** ES01
10. **DISTRIBUTION:** Cognizant property administrator
11. **INITIAL SUBMISSION:** Preliminary three months after Authority to Proceed (ATP).
12. **SUBMISSION FREQUENCY:** Final one year after ATP; revise as required
13. **REMARKS:** This document shall be the official contract requirements document for the control and identification of all Government property.
14. **INTERRELATIONSHIP:** PWS paragraph 1.2.2
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Government Property Management Plan defines the contractor's methods of care, accounting, and control of Government property and materials.
- 15.2 **APPLICABLE DOCUMENTS:**
- |                 |   |
|-----------------|---|
| FAR             | <i>Federal Acquisition Regulation, Part 45</i>  |
| FAR             | <i>Federal Acquisition Regulation, Part 52.245</i>  |
| NFS 1852.245    | <i>NASA/FAR Supplement and latest revisions thereto</i>   |
| NFS 1852.245-80 | <i>NASA FAR Supplement, Government Property Management Information (PIC 07-09)</i>                                |
| NPR 4100.1      | <i>Supply Support and Material Management Policy</i>  |
| NPR 4200.1      | <i>Equipment Management</i>   |
| NPR 4300.1      | <i>NASA Personal Property Disposal Policy</i>   |
| NPR 5100.4      | <i>Federal Acquisition Regulation Supplement (NASA/FAR Supplement) [48 CFR 1800-1899] (REVALIDATED 9/16/2008)</i> |
- 15.3 **CONTENTS:** The Government Property Management Plan shall satisfy the requirements of the documents listed in 15.2, and the contract. This plan shall consist of those procedures which constitute the contractor's property management system and shall include the following categories:
- |                          |                           |
|--------------------------|---------------------------|
| a. Property management.  | i. Reports.               |
| b. Acquisition.          | j. Consumption.           |
| c. Receiving.            | k. Utilization.           |
| d. Identification.       | l. Maintenance.           |
| e. Records.              | m. Subcontractor control. |
| f. Movement.             | n. Disposition.           |
| g. Storage.              | o. Contract close-out.    |
| h. Physical inventories. |                           |
- 15.3 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** Changes shall be incorporated by change page or complete reissue.

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-001**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Management Plan
7. **DESCRIPTION/USE:** To provide a description of the contractor's overall management system and organization for accomplishing the requirements set forth in the contract.
8. **OPR:** ES01      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Thirty (30) days after Authority to Proceed (ATP), (including phase-in period)
12. **SUBMISSION FREQUENCY:** Revise as required
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 1.1
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Management Plan shall describe the contractor's concept plans, practice, and approach for accomplishing the requirements set forth in the contract, i.e., managing and controlling project tasks, experimental work, and management interfaces. The plan shall be in such detail as necessary to convey the contractor's internal procedures.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Management Plan shall include:
  - a. Description of the project tasks to be accomplished and an outline of methods by which the contractor proposes to accomplish each task down to the level III WBS task level.
  - b. Description of management concepts, plans, project management and task/control systems, organizational approach, and communication channels between the contractor and the Government. This shall include descriptions, flow charts, schedules, and other documentation necessary to give a comprehensive plan of organization and accomplishment.
  - c. Receiving, estimating and processing customer orders through the fabrication and assembly of Research and Development (R&D) Space Flight and Associated Hardware.
  - d. Issuing, receiving, and controlling work done by subcontractor(s) to augment the fabrication and assembly capability.
  - e. Fabrication process planning and production control (which includes scheduling and monitoring shop workloads, expediting hardware and status of work orders).
  - f. Description of how outside/commercial work will be solicited, procured, managed, and scheduled. Description of how cost to customer is determined.
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** Changes shall be incorporated by change page or by complete reissue.

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-002**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Task Order Plan (TOP)
7. **DESCRIPTION/USE:** To provide a plan that satisfies the requirements set forth in a Task Order Request.
8. **OPR:** ES01      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Draft submitted within Five (5) days of Task Order Request (TOR) or modification request of an existing Task Order Plan
12. **SUBMISSION FREQUENCY:** Five (5) days of Task Order Request (TOR) or modification request of an existing Task Order Plan
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 1.1.1
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Task Order Plan (TOP) contains the elements of documentation necessary to determine the contractor's understanding of the requirements set forth in the Task Order Request.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Task Order Plan (TOP) shall include:
  - a. Contract Number.
  - b. Task Order Title.
  - c. Task Order Plan Number.
  - d. Period of Performance.
  - e. PR Number.
  - f. Task Manager.
  - g. Task Order Lead (contractor).
  - h. Task Order Description.
  - i. Technical Approach (including required input, guidelines and assumptions).
  - j. Discussion of skills required.
  - k. Special tools required.
  - l. Milestones and Deliverables.
  - m. Schedule.
  - n. Special considerations (recruiting, consulting, etc.).
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** Changes shall be incorporated by change page or by complete reissue.

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-003**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Financial Management Report (533M)
7. **DESCRIPTION/USE:** To provide monthly financial reports for monitoring program costs. The 533 reports are the official cost documents used at NASA for cost type, price redetermination, and fixed price incentive contracts.
8. **OPR:** CS40                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Within 30 days after the incurrence of cost
12. **SUBMISSION FREQUENCY:** No later than 10 working days following the end of the contractor's accounting month
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 1.4
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Financial Management Report provides data on accumulated costs and funding projections for management of the contract.
- 15.2 **APPLICABLE DOCUMENTS:**

NFS 1852.242-73	<i>NASA Contractor Financial Management Reporting, (November 2004)</i>
NPR 9501.2D	<i>NASA Contractor Financial Management Reporting</i>
- 15.3 **CONTENTS:** The elements of cost for financial reporting shall be mutually agreed by the contractor and NASA project office and cover labor hours by function, direct labor cost, materials, subcontracts, interdivisional work, other direct rates, overhead by pool, fringe, G&A, and fee. Changes or additions to elements of cost shall be by mutual agreement between the contractor and the NASA project manager. The data contained in the reports shall be auditable using Generally Accepted Accounting Principles. The 533M Report shall include actuals and projections at the total contract level. A summary page at the contract level shall be included reflecting the cumulative since inception cost for the contract. The 533 shall list all costs by Employee & PWS/WBS.
- 15.4 **FORMAT:** The NASA Form 533M shall be prepared per NPR 9501.2D and NFS 1852.242-73. Contractor format is acceptable provided all necessary requirements are met. Electronic submission of contractor data is strongly encouraged.
- 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-004**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/2
6. **TITLE:** Monthly Cost and Status Reports
7. **DESCRIPTION/USE:** To provide visibility to contractor and MSFC project management of actual and potential problems and progress toward meeting the cost, technical and schedule requirements.
8. **OPR:** ES01                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** First calendar month following the end of the first full month after Authority to Proceed (ATP), unless otherwise specified by the Contracting Officer
12. **SUBMISSION FREQUENCY:** 10 days following the end of each month
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 1.1.4
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Monthly Cost and Status Reports provides data for the assessment of monthly cost, technical and schedule progress and summarizes the results of the entire contract work.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Monthly Cost and Status Reports shall contain:
  - a. Cost breakdown spreadsheet providing all cost information by employee:
    1. Employee Name.
    2. PWS/WBS supported for each Employee PWS/WBS combination:
      - (a) Hours on each PWS/WBS.
      - (b) Overtime hours for each PWS/WBS.
      - (c) Base Cost for hours.
      - (d) Base Costs to government.
      - (e) Overtime Costs to government.
      - (f) Travel charged to government.
      - (g) Training charged to government.
      - (h) Procurement charged to government for PWS/WBS.
      - (i) Employee Position Description.
  - b. The Monthly Status Report shall contain:
    1. Program status review that contains, but not limited to action items, contract actions (modification, etc.), staffing (number by company), open positions by Mission and/or IDIQ, status of offer letters, etc.
    2. Commercial work review that contains information on the work, PWS area, whether work is performed through Space Act or PO-to-PO, and financial savings to the Government.
    3. Work accomplished for the current reporting period and planned for all PWS

**DRD Continuation Sheet**

TITLE: Monthly Cost and Status Reports

DRD NO.: **1163MA-004**

DATA TYPE: 3

PAGE: 2/2

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

- elements (including safety, quality, etc.) and provide overview of work statistics (work backlog, etc.).
- 4. Review of problems/issues which could impede performance or impact cost and schedule. Propose corrective actions.
- 5. Provide minutes for each of the reviews and include copies of all presentation charts.
- 6. Provide other information deemed pertinent by the contractor, to assist the Government in evaluating the contractor's cost, technical and management performance.

15.4 **FORMAT:** Contractor format is acceptable.15.5 **MAINTENANCE:** None required

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                    **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-005**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Badged Employee and Remote IT User Listing
7. **DESCRIPTION/USE:** To assist NASA in conducting contractor floor checks and to determine if the employees meet the minimum background investigation requirements.
8. **OPR:** AS50                    9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter. One copy each shall go to MSFC's Protective Services Office and Facilities Planning and Business Management Office.
11. **INITIAL SUBMISSION:** No later than 10 working days after Authority to Proceed (ATP), (including phase-in period)
12. **SUBMISSION FREQUENCY:** Formal update quarterly and email changes as personnel changes occur to distribution. If deemed necessary by the Contracting Officer, the contractor shall submit the list at times other than stated.
13. **REMARKS:** Reference is made to Federal Acquisition Regulation (FAR) Clause, FAR 52.215-2, *Audit and Records--Negotiations* (June 1999), NPR 1600.1, *NASA Security Program Procedural Requirements*.
14. **INTERRELATIONSHIP:** PWS paragraph 1.2.7
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Badged Employee and Remote IT User Listing provides NASA with a list of all MSFC badged contractor employees, as well as, any contractor remote IT users who will have access to the MSFC IT system.
  - 15.2 **APPLICABLE DOCUMENTS:** None
  - 15.3 **CONTENTS:** The Badged Employee and Remote IT User Listing shall include the following information for each employee: employee's full name (first and middle names must be birth names), last four digits of the Social Security Number (SSN), date of birth, place of birth, duty position, duty location (building/room number), shift assignment, and supervisor's name. Additionally, if applicable, the type of security background check already completed (NACLC or SSBI) and the date it was completed.
  - 15.4 **FORMAT:** Contractor format using Excel Spreadsheet is acceptable.
  - 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163            **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-006**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Contractor Employee Clearance Document
7. **DESCRIPTION/USE:** To ensure that badged contractor employees who no longer require Center access properly clear all accounts when the access is no longer needed.
8. **OPR:** AS50            9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Immediately when the access is no longer needed
12. **SUBMISSION FREQUENCY:** As required
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 1.1.5
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Contractor Employee Clearance Document provides verification that all badged employees have properly cleared all accounts when the access is no longer needed.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Contractor Employee Clearance Document shall contain all the information required by MSFC Form 383-1.
- 15.4 **FORMAT:** MSFC Form 383-1, "Contractor Employee Clearance Document".
- 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163                    **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-007**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
  
6. **TITLE:** Position Risk Designation for Non-NASA Employee
  
7. **DESCRIPTION/USE:** To ensure that contractor employees are screened to an appropriate risk determination in accordance with NPR 1600.1, *NASA Security Program Procedural Requirements*, Chapter 4.
  
8. **OPR:** AS50                    9. **DM:** ES01
  
10. **DISTRIBUTION:** Per Contracting Officer's letter. One copy shall go to MSFC Protective Services Office.
  
11. **INITIAL SUBMISSION:** No later than 10 working days after Authority to Proceed (ATP), (including phase-in period)
  
12. **SUBMISSION FREQUENCY:** Update as personnel or position changes occur
  
13. **REMARKS:**
  
14. **INTERRELATIONSHIP:** PWS paragraph 1.1.6
  
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Position Risk Designation for Non-NASA Employee provides information necessary to determine the type of investigation required and how closely an individual is screened for a position.
- 15.2 **APPLICABLE DOCUMENTS:**  
NPR 1600.1                    *NASA Security Program Procedural Requirements*
- 15.3 **CONTENTS:** The Position Risk Designation for Non-NASA Employee shall contain all the information required by NASA Form 1760 in accordance with NPR 1600.1, *NASA Security Program Procedural Requirements*.
- 15.4 **FORMAT:** NASA Form 1760, "Position Risk Designation for Non-NASA Employee", or as may otherwise be directed by the Contracting Officer.
- 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163                      **ISSUE:** Revision F                      2. **DRD NO.:** **1163MA-008**
3. **DATA TYPE:** 3                      4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/2
6. **TITLE:** Monthly and Semi-Annually Performance Reports
7. **DESCRIPTION/USE:** To provide visibility to contractor and MSFC technical monitor of actual and potential problems toward meeting established performance measurements in estimating, product delivery dates and quality of products.
8. **OPR:** ES01                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** First calendar month following the end of the first full month after Authority to Proceed (ATP), unless otherwise specified by the Contracting Officer.
12. **SUBMISSION FREQUENCY:** Monthly: 10 days following the end of each month.  
Semi-Annually: 10 days following the end of the reporting period.
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 2.4
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Monthly and Semi-Annually Performance Reports provides data for the assessment of monthly customer orders and summarizes the performance results of PWS 2.4.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Monthly and Semi-Annually Performance Reports shall include:
  - a. The first monthly report shall contain:
    1. Customer Order Number.
    2. Metric (Fixed Cost, Delivery w/Fixed Cost and Actual).
    3. Order Date.
    4. Original Promised Date.
    5. Actual Completion Date.
    6. Duration.
    7. Days Early – Days Late.
    8. Hours Estimated.
    9. Actual Hours.
    10. Hours Deviation.
    11. % Deviation.
    12. Description of Customer Order.
  - b. The second monthly report shall contain:
    1. Identified jobs (by Customer Order) receiving a Non-Conformance.
    2. Number of total jobs completed during the month.
    3. Percentage of Non-conformance versus total jobs for the month (per job and hours).
    4. Identify jobs that receive "Rework".

**DRD Continuation Sheet**

TITLE: Monthly and Semi-Annually Performance Reports

DRD NO.: **1163MA-008**

DATA TYPE: 3

PAGE: 2/2

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15.3 **DATA PREPARATION INFORMATION (CONTINUED):**

5. Identify jobs that receive "Use As Is".
6. Identify jobs that receive "Scrap".
7. Identified Non-Conformance job's original hours to complete.
8. Number of hours to correct Non-Conformance (even if "Scrapped").
9. Percentage of correction versus original total hours.

c. The Semi-Annually Report shall contain a summary of first and second monthly reports.

15.4 **FORMAT:** Microsoft Excel shall be utilized.

15.5 **MAINTENANCE:** None required

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-009**
3. **DATA TYPE:** 2
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/2
  
6. **TITLE:** Organizational Conflict of Interest (OCI) Avoidance Plan
  
7. **DESCRIPTION/USE:** To demonstrate to the Government that the Contractor will mitigate organizational conflicts of interest and ensure that the contractor provides unbiased, impartial advice and adequately protects sensitive data.
  
8. **OPR:** PS21                      9. **DM:** ES01
  
10. **DISTRIBUTION:** Per Contracting Officer's letter
  
11. **INITIAL SUBMISSION:** 10 working days following Authority to Proceed (ATP) (including phase-in period)
  
12. **SUBMISSION FREQUENCY:** Update as required
  
13. **REMARKS:** Reference is made to Contract Clauses H.2, *Limitation of Future Contracting (NFS 1852.209-71)*, H.3, *Organizational Conflicts of Interest*, I.7, *Access to Sensitive Information (NFS 1852.237-72)*, and I.8, *Release of Sensitive Information (NFS 1852.237-73)*.
  
14. **INTERRELATIONSHIP:** PWS paragraph 1.1
  
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Organizational Conflicts of Interest Avoidance Plan demonstrates that no organizational conflict of interest exists or that any such potential conflicts have been adequately avoided or mitigated with any prime contractor or subcontractor performing or planning to propose on design, development, and/or delivery of space flight hardware, software, mission integration services or other critical systems related to MSFC. The Contractor should not assume that government performance of a contracted task is a form of mitigation.
  
- 15.2 **APPLICABLE DOCUMENTS:** None
  
- 15.3 **CONTENTS:** The Organizational Conflict of Interest Avoidance Plan shall include the following:
  - a. Organizational conflicts of interest pertaining to impaired objectivity shall be addressed as follows:
    1. Describe the nature of the conflict including any business relationships that might create a conflict with the performance of the work statement
    2. Describe the plan for avoiding, neutralizing, or mitigating the conflict, including the following with regard to subject matter experts/technical experts if applicable:
      - (a) That the management reporting chains between this contract and the work performed by the subject matter experts/technical experts for the conflicting business relationship are separated from each other.
      - (b) That the subject matter experts/technical experts when performing under this contract are physically separated from the portion of the company performing the work for the conflicting business relationships.

## DRD Continuation Sheet

TITLE: Organizational Conflict of Interest (OCI) Avoidance Plan DRD NO.: **1163MA-009**

DATA TYPE: 2

PAGE: 2/2

15. **DATA PREPARATION INFORMATION (CONTINUED):**

- (c) That each subject matter expert/technical expert performing under this contract signs an express, binding, written agreement setting forth all responsibilities and duties to avoid organizational conflicts of interest and to protect sensitive data provided under this order.
  - (d) That techniques are in place to ensure that the contractor shall not favor the conflicting business relationships and will avoid the appearance of conflicts of interest.
- b. With regard to access to nonpublic information, the avoidance plan shall contain a plan to safeguard all proprietary/sensitive data the contractor (including all employees and subject matter experts/technical experts) receives. This plan shall include:
1. A provision that the contractor shall not disclose or improperly use the proprietary/sensitive data received or accessed under this contract.
  2. A provision that information, whether in hard copy or on electronic media, shall be marked, handled, stored, and destroyed in order to preclude an unauthorized disclosure of information.
  3. A provision that information technology shall be protected to prevent unauthorized disclosure of information.
  4. A provision that employees performing the effort must sign an express binding written agreement clearly agreeing to protect sensitive data.
  5. A requirement that subcontractors have appropriate OCI avoidance procedures in place for the use of subject matter experts.
  6. A requirement for periodic self-audits, the results of which shall be made available to the Government.
  7. Initial and periodic refresher OCI training for the contractor employees/experts working on this contract.
  8. A description of organizational and employee sanctions for violation of the OCI order clause or OCI Avoidance Plan provisions.
  9. Provisions on record keeping requirements regarding OCI (e.g., training, written agreements). The contractor shall make these records available to and cooperate with any neutral third party the Government assigns to review adherence to their OCI mitigation plan.
  10. A provision requiring the contractor to report any real, apparent, or potential conflict of interest that may arise to the Contracting Officer.
  11. A provision requiring the contractor to update the OCI Avoidance Plan upon occurrence of any event that will cause a change to the plan.

15.4 **FORMAT:** Contractor format is acceptable.

15.5 **MAINTENANCE:** Changes shall be incorporated by change page or complete reissue.

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-010**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
  
6. **TITLE:** Monthly Metrology and Calibration Services Report
  
7. **DESCRIPTION/USE:** To provide the Government insight into contractor performance in all areas of the Task Order and assist in identifying existing or potential problems.
  
8. **OPR:** ET02                      9. **DM:** ES01
  
10. **DISTRIBUTION:** Per Contracting Officer's letter
  
11. **INITIAL SUBMISSION:** First calendar month following the end of the first full month after Authority to Proceed (ATP), unless otherwise specified by the Contracting Officer.
  
12. **SUBMISSION FREQUENCY:** 10 days following the end of each month
  
13. **REMARKS:**
  
14. **INTERRELATIONSHIP:** PWS paragraph 3.6
  
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Monthly Metrology and Calibration Services Report provides data for the assessment of technical performance and timeliness by utilizing the Government provided metrology and calibration databases.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Monthly Metrology and Calibration Services Report shall contain the following as a minimum:
  - a. Number of Measurement & Test Equipment (MTE) picked up and delivered.
  - b. Number of In-house MTE calibrations and/or repairs performed (specify the number of in-situ calibrations performed).
  - c. Number of Priority MTE calibrations and/or repairs.
  - d. Number of Outsourced MTE calibrations and/or repairs.
  - e. Number of Outsourced MTE calibrations and/or repairs returned to the customer over 20/40/60 days.
  - f. Number of MTE calibrations and/or repairs performed for other NASA Centers, Agencies, and customers.
  - g. Number of Special Requests, to include Program, Project, Test, and/or customer and brief description.
  - h. Number of MTE returned to customers late with number of days over.
  - i. Provide any cost savings to the Government for the month and the accumulated value for the contract year.
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

- |    |                      |                                |    |                                   |
|----|----------------------|--------------------------------|----|-----------------------------------|
| 1. | <b>DPD NO.:</b> 1163 | <b>ISSUE:</b> Draft Revision F | 2. | <b>DRD NO.:</b> <b>1163MA-011</b> |
| 3. | <b>DATA TYPE:</b> 3  |                                | 4. | <b>DATE REVISED:</b> 02-21-12     |
|    |                      |                                | 5. | <b>PAGE:</b> 1/1                  |
6. **TITLE:** Monthly Valve and Component Services Report
7. **DESCRIPTION/USE:** To provide Government insight into contractor performance in all areas of the Task Order and assist in identifying existing or potential problems.
8. **OPR:** ET02                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Thirty (30) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Revise as required
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 3.16
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Monthly Valve and Component Laboratory (VCL) Services Report provides data for the assessment of technical performance and timeliness by utilizing the Government provided valve and component databases.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Monthly Valve and Component Laboratory (VCL) Services Report shall contain the following as a minimum:
- a. Number of components received and returned for servicing
  - b. Number of components received and returned for cleaning.
  - c. Number of machined parts completed.
  - d. Number of Priority components supported.
  - e. Number of Man-hours performed for machining, servicing and cleaning.
  - f. Number of Material Usage Agreements prepared and submitted.
  - g. Number of Valve Material Baseline Certifications prepared and submitted.
  - h. Number of Special Requests, to include Program/Project/Test name and/or customer and brief description.
  - i. Number of components returned to customers late with number of days over.
  - j. Provide any cost savings to the Government for the month and the accumulated value for the contract year.
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** None required

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-012**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Test Chronology Report
7. **DESCRIPTION/USE:** To provide a detailed listing and summary of all tests performed.
8. **OPR:** ET02              9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Forty (40) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Monthly; 10 days following the end of the month
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Test Chronology Report establishes the requirement for the collection of data for all tests performed in the East and West propulsion test areas.
  - 15.2 **APPLICABLE DOCUMENTS:** None
  - 15.3 **CONTENTS:** The Test Chronology Report shall contain two data sheets 1) Test chronology summary; and 2) detailed test listing. The report shall contain:
    - a. Test chronology:
      1. Sorted by quarter, then project, then facility, then number of tests.
      2. Each quarter shall have a total number of tests and FY total number tests.
    - b. Detailed test listing:
      1. Sorted by facility, then project, then test titles. Dates shall be given for line item.
  - 15.4 **FORMAT:** Contractor format shall be Excel.
  - 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-013**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Monthly Workforce Reports
7. **DESCRIPTION/USE:** Reporting of workforce for both the prime and all subcontractors to MSFC management.
8. **OPR:** ET02      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** One (1) month after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Monthly; 10 days following the end of the month
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Monthly Workforce Reports will provide monthly status (dollars and workforce) broken down by Projects.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Monthly Workforce Reports, a total of three reports, shall include the following:
  - a. First report shall consist of data that is delineated by project. Each project shall have labor and materials cost by month. The report shall also provide a cumulative cost for each project for contract year.
  - b. Second report shall consist of data that is delineated by project. Each project man-hours shall be broken down weekly with a monthly cumulative.
  - c. Third report shall consist of data that is delineated by project. Each project total costs shall be broken down weekly with a total cumulative cost from project start date.
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** None required

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-014**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Propellants and Pressurants Management Plan
7. **DESCRIPTION/USE:** To document the process to plan, forecast, order, receive, assure quality, store, track usage, conservation and reporting of all propellants and pressurants required for test programs assigned to METTS.
8. **OPR:** ET02              9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Forty-five (45) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Revise as required
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Propellants and Pressurants Management Plan will govern the operations of the propellant management function within the METTS contract.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Propellants and Pressurants Management Plan shall include, but limited to, development of procedures for:
  - a. Planning and forecasting the requirements.
  - b. Ordering and receiving propellants and pressurants.
  - c. Assuring the quality of media received.
  - d. Tracking the usage of media.
  - e. Establishing procedures and techniques for conserving media.
  - f. Reporting of all elements of propellant management, including cost by commodity contract and use program.
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** Changes shall be incorporated by change page or complete reissue.

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-015**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/3
6. **TITLE:** Propellants and Pressurants (P&P) Forecast and Logistic Reports
7. **DESCRIPTION/USE:** To provide the monthly and 3 year P&P forecast reports and the monthly P&P logistic report assigned to METTS.
8. **OPR:** ET02      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Forty-five (45) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** P&P Monthly Forecast Report: 20<sup>th</sup> of each month. P&P 3 Year Forecast Report: February 1 of each year. P&P Monthly Logistic Report: 10 days after the first of the month.
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Propellants and Pressurants (P&P) Forecast and Logistic Reports will provide a monthly and a 3 year forecast usage.
  - 15.2 **APPLICABLE DOCUMENTS:** None
  - 15.4 **CONTENTS:** The Propellants and Pressurants (P&P) Forecast and Logistic Reports shall be in accordance with the Government approved Propellants and Pressurants Management Plan and shall include at a minimum the following:
    - a. P & P Monthly Forecast:
      1. Project Number (if applicable).
      2. Project Name.
      3. Funding Code Position (if applicable).
      4. Engineer.
      5. Liquid Oxygen (LOX) (Gallons).
      6. LOX Cost.
      7. Liquid Hydrogen (LH2) (Gallons).
      8. LH2 Cost.
      9. Gaseous Hydrogen (GH2) (Standard Cubic Foot-SCF).
      10. GH2 Cost.
      11. Liquid Nitrogen (LN2) (Gallons).
      12. LN2 Cost.
      13. Gaseous Helium (GHe) (SCF).
      14. GHe Cost.
      15. Rocket Propellant 1 (RP-1) (Gallons).
      16. RP-1 Cost.
      17. Gaseous Nitrogen (GN2) (SCF).
      18. GN2 Cost.
      19. Gaseous Oxygen (GOX) (SCF).
      20. GOX Cost.

**DRD Continuation Sheet**

TITLE: The Propellants and Pressurants (P&P) Forecast and Logistics Reports DRD NO.: **1163MA-015**

DATA TYPE: 3

PAGE: 2/3

15.3 DATA PREPARATION INFORMATION (CONTINUED):

21. Liquid Methane (Gallons).
22. Liquid Helium (Gallons).
23. Liquid Nitrogen Dewars.
24. Liquid Oxygen Dewars.
- b. P & P 3 Year P&P Forecast:
  1. Monthly increments for the fiscal year.
  2. Quarterly increments for the out years.
  3. Liquid Hydrogen (Gallons).
  4. Gaseous Hydrogen (Standard Cubic Foot-SCF).
  5. Liquid Oxygen (Gallons).
  6. Gaseous Oxygen (SCF).
  7. Liquid Nitrogen (Gallons).
  8. Gaseous Nitrogen (SCF).
  9. Gaseous Helium (SCF).
  10. RP-1 (Gallons).
  11. Liquid Methane (Gallons).
  12. Liquid Natural Gas (Gallons).
  13. Jet Propellant (JP1) (Gallons).
- c. P & P Monthly Logistic Report:
  1. Liquid Nitrogen Cost Summary.
  2. Liquid Oxygen Cost Summary.
  3. Gaseous Helium Cost Summary.
  4. Cryogenic Facility Group.
  5. Gaseous Facility Group.
  6. Test Support Group.
  7. Liquid Oxygen Data.
  8. Liquid Hydrogen Data.
  9. Liquid Nitrogen Data.
  10. Gas Trailers Data.
  11. Gaseous Hydrogen Data.
  12. Gaseous Helium Data.
  13. Gaseous Nitrogen Data.
  14. Air Data.
  15. Water Data.
  16. RP-1 Data.
  17. Gaseous Hydrogen Pipeline Usage.
  18. Gaseous Nitrogen Pipeline Usage.
  19. Liquid Nitrogen Dewars.
  20. Liquid Oxygen Dewars.
  21. RP-1 Delivered.
  22. DI Water Delivered.
  23. High Pressure Air Pipeline.
  24. East Area Pump House.
  25. West Area Pump House.
  26. Shop Air Pipeline Usage.
  27. Gas Trailers Summary, Delivered.
  28. Air Trailers Delivered.
  29. Gaseous Hydrogen Trailers Delivered.
  30. Gaseous Helium Trailers Delivered.

**DRD Continuation Sheet**

**TITLE:** The Propellants and Pressurants (P&P) Forecast and Logistics Reports **DRD NO.:** **1163MA-015**

**DATA TYPE:** 3

**PAGE:** 3/3

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15.3 **DATA PREPARATION INFORMATION (CONTINUED):**

- 31. Gaseous Nitrogen Trailers Delivered.
- 32. Gaseous Oxygen Trailers Delivered.
- 33. Wind Tunnel Pipeline Usage.
- 34. Liquid Hydrogen Vendors Delivered/Liquid Hydrogen Trailers Delivered.
- 35. Liquid Nitrogen Delivered/Liquid Nitrogen Trailers Delivered.
- 36. Liquid Oxygen Received.
- 37. Gaseous Helium Pipeline Usage.

15.4 **FORMAT:** Contractor format is acceptable.

15.5 **MAINTENANCE:** None required

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-016**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/2
6. **TITLE:** Test Area Support Reports
7. **DESCRIPTION/USE:** To provide a two-week detailed test schedule, schedule overview, and non-duty hours reports.
8. **OPR:** ET02      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Five (5) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Weekly
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Test Area Support Reports provides a test schedule and schedule of non-duty activities of the test area.
  - 15.2 **APPLICABLE DOCUMENTS:** None
  - 15.3 **CONTENTS:** The Test Area Support Reports shall include the following:
    - a. Two Week Test Schedule Report (update daily).
      1. Activity Name.
      2. Test Position (test stand).
      3. Lead Engineer.
      4. Project Number.
      5. Required Support.
      6. Current/Projected Test Activity.
    - b. Schedule Overview Report.
      1. Test Lab internal Project Code.
      2. Task Description.
      3. Resource Names.
      4. Test Lab Test Facility.
      5. Lead Engineer.
      6. Start Date.
      7. Finish Date.
      8. Percent Complete.
      9. Six Month Projection.
    - c. Non-Duty Hours Report.
      1. Contract Number.
      2. Contractor.
      3. Building Number/Name.
      4. Date.
      5. Contractor Point of Contact.
      6. Construction Management Inspector.
      7. Construction Management Inspector Coverage.

## DRD Continuation Sheet

TITLE: Test Area Support Reports

DRD NO.: **1163MA-016**

DATA TYPE: 3

PAGE: 2/2

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

15.4 **FORMAT:** Contractor format is acceptable.

15.5 **MAINTENANCE:** None required

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-017**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Employee Cross-training Report
7. **DESCRIPTION/USE:** To provide a summary of employee cross-training across all elements of the contract.
8. **OPR:** ET02      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Forty (40) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Monthly; 10 days following the end of the month
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Employee Cross-training Report establishes the requirement for the Contractor to forecast cross-training and cross-utilization opportunities and identify opportunities that have been accomplished.
  - 15.2 **APPLICABLE DOCUMENTS:** None
  - 15.3 **CONTENTS:** The Employee Cross-training Report shall include job classifications, technical work description, and WBS elements.
  - 15.4 **FORMAT:** Contractor format is acceptable.
  - 15.5 **MAINTENANCE:** None required

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163MA-018**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Maintenance Plan
7. **DESCRIPTION/USE:** To provide a description of the contractor's Maintenance Plan for Propellants and Pressurants Services' facilities, systems, vessels, and equipment defined in Appendix D.
8. **OPR:** ET02      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Thirty (30) days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Revise as required
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraphs 1.2.1 and 3.18
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Maintenance Plan describes the contractor's plan and approach for accomplishing preventative and corrective maintenance requirements for Propellants and Pressurants Services' facilities, systems, vessels, and equipment defined in Appendix D. The plan shall be in such detail as necessary to convey the contractor's internal procedures.
  - 15.2 **APPLICABLE DOCUMENTS:** None
  - 15.3 **CONTENTS:** The Maintenance Plan shall include:
    - a. Description of the preventative maintenance plan to protect the life cycle of the facilities, systems, and equipment in Appendix D and methods to track.
    - b. Description of the corrective maintenance plan to return facility, system, and equipment in Appendix D to a condition that it may be effectively utilized for its intended purpose through life cycle, minimizing delays and stoppages.
  - 15.4 **FORMAT:** Contractor format is acceptable.
  - 15.5 **MAINTENANCE:** Changes shall be incorporated by change page or by complete reissue.

**DATA REQUIREMENTS DESCRIPTION (DRD)**

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163QE-001**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/3
  
6. **TITLE:** Quality Management System Plan
  
7. **DESCRIPTION/USE:** To define the contractor's planned methods for accomplishing the applicable tasks required to satisfy the quality requirements of NPD 8730.5 for the specific products and engineering technical support being procured.
  
8. **OPR:** QD40                      9. **DM:** ES01
  
10. **DISTRIBUTION:** Per Contracting Officer's letter
  
11. **INITIAL SUBMISSION:** Four (4) months after Authority to Proceed (ATP), (including phase-in period)
  
12. **SUBMISSION FREQUENCY:** Revise as required to address new or changed Task Orders with submission as agreed upon through the COTR.
  
13. **REMARKS:** A copy of the current Quality System Manual will be provided to the Contractor upon contract award
  
14. **INTERRELATIONSHIP:** PWS paragraphs 1.1.2, 1.1.7 and 3.16
  
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Quality Management System Plan shall identify, as applicable, the specific quality management system activities related to the procurement of materials/subcomponents, fabrication, assembly, and engineering technical support and services to assure the quality of the products delivered. The plan(s) will reference the contractor's quality manual and procedures as necessary to fully describe the contractor's quality system. Quality planning can be prepared as a single plan or a top level plan with separate task level planning, or any combination thereof. Updates to planning shall be addressed for any additional tasks added to the contract or for any changes if required.
  
  - 15.2 **APPLICABLE DOCUMENTS:**

NPD 8730.5	<i>NASA Quality Assurance Program Policy</i>
NPR 8735.2	<i>Management of Government Safety and Mission Assurance Surveillance Functions for NASA Contract</i>
NASA-STD-8719.17	<i>NASA Requirements for Ground-based Pressure Vessels and Pressurized Systems (PVS)</i>
ET01-TOO-POP-001	<i>Retest and Refurbishment of MSFC Compressed Gas Trailers</i>
MWI 8710.1	<i>Inspection and Certification Process for Pressure Vessels and Systems (PVS)</i>
SAE AS9100	<i>Quality Management Systems - Aerospace – Requirements</i>
ASME BPVC	<i>American Society of Mechanical Engineers Boiler and Pressure Vessel Code</i>
ASME B31	<i>American Society of Mechanical Engineers Code for Pressure Piping</i>
ANSI/AWS D1	<i>Structural Welding Codes</i>

## DRD Continuation Sheet

TITLE: Quality Management System Plan

DRD NO.: **1163QE-001**

DATA TYPE: 1

PAGE: 2/3

15. **DATA PREPARATION INFORMATION (CONTINUED):**

15.3 **CONTENTS:** The Quality Management System Plan shall include the following:

1. Each quality element of SAE AS9100 shall be addressed to describe the philosophy and approach for implementation of the quality management system. This can be satisfied by contractor's existing quality manual and procedures. The only exceptions allowed will be processes noted in Section 7 of SAE AS9100 and as specified in the contract Performance Work Statement (PWS) and/or in each task agreement. A copy of the Quality System Manual and 1<sup>st</sup> tier procedures shall be submitted with any required quality plan. As a minimum, the subparagraphs below shall be addressed by the quality plan to include details of responsibilities and controls to adequately describe the specific quality assurance and personnel resource activities related to hardware and technical support being procured by MSFC:
  - a. NASA MSFC Performance Work Statement (PWS) Activities – describe how hardware specific quality requirements imposed by contract or component/equipment specification will be assured (i.e., traceability requirements, specific inspection points, specific quality activities).
  - b. Responsibilities – describe which contractor organizations will be responsible to perform the applicable quality management system activities which need to include how the Contractor will support the MSFC requirements specified in the Contract Surveillance Plan (Reference NPR 8735.2).
  - c. Article, Material, and Service Controls - describe the level of article, material, and service control including traceability requirements invoked by the contractor for the articles, materials, and/or services used in or performed as part of the hardware design and maintenance criteria, including how quality is assured for each material, part, assembly, and/or service performed.
  - d. Procurement – include the procurement quality requirements for all materials/parts/ components the contractor purchases. Define the level of control exercised over the suppliers including how suppliers are monitored, and maintained with controls for supplier non-conformances processing in reference to the requirements in section 4.2 of the PWS.
  - e. Milestone Reviews – describe how the contractor's quality system will support milestone reviews as requested by MSFC.
  - f. Configuration Assurance – describe how the configuration of the hardware build is compared and verified to the approved design baseline drawings and specifications as requested by NASA. Describe how the configuration of Government Furnished Property/Equipment is maintained.
  - g. Special Process Controls – describe special process controls implemented for in-house processes and, if applicable, for sub-tier supplier processes. Controls will include required training, certification, and maintenance of competency for technical personnel.
  - h. Inspection and Test (describe who will be responsible to perform inspections to include any limitations) – include: how the quality of purchased items is validated at receiving inspection or at sub-tier suppliers facilities, specific in-process (manufacturing) inspections performed, details of final inspection and pre-ship inspections.
  - i. Nonconformance Processing - describe how nonconformance will be documented and dispositioned as specified in the PWS, section 4.2.
  - j. Record retention – for those records not delivered to MSFC, specify which records are required to be kept, who keeps them, for how long, and how they are to be

**DRD Continuation Sheet**

TITLE: Quality Management System Plan

DRD NO.: **1163QE-001**

DATA TYPE: 1

PAGE: 3/3

**15. DATA PREPARATION INFORMATION (CONTINUED):**

- dispositioned at the end of the retention period, and/or as specified in the contract.
- k. Personnel training and competency processes will need to be specified for all personnel who affect products and technical support delivered on this contract. Resources for training to the requirements of this contract, specified by special processes, will be provided by MSFC. Contractor training management communication with MSFC will need to be specified to assure adequate resources to maintain special process personnel competency.
2. In addition to the requirements in 15.3, paragraph 1, the plan shall outline the proposed systems and quality controls to:
- a. Provide services to ensure structural and pressure system welding are in accordance NASA and industry standards and codes as defined in NASA-STD-8719.17, ASME B&PVC, ASME B31 and ANSI/AWS D1.
  - b. Provide National Board Inspection Code "R Stamp" certified services to repair or perform alterations of previously ASME "Code Stamp" vessels and NASA identified vessels.
  - c. Provide services to ensure the certification of assigned trailers in accordance with MWI 8710.1 or NASA approved equivalent and of DOT certified trailers in accordance with ET01-TOO-POP-001.

15.4 **FORMAT:** Contractor format is acceptable.

15.5 **MAINTENANCE:** Changes shall be incorporated by change page or complete reissue.

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163      **ISSUE:** Revision F
2. **DRD NO.:** **1163QE-002**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/1
6. **TITLE:** Deficiency Corrective and Preventive Action Report
7. **DESCRIPTION/USE:** To provide the Government with the corrective and preventive actions taken by the contractor to track the identification and resolution of an identified deficiency in the Metrology and Calibration Laboratory (MCL) or Valve & Component Laboratory (VCL). A deficiency is defined as any rework (to include data), customer complaints, or any issue that impacts quality, schedule, or cost.
8. **OPR:** ET02              9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** First calendar month following the end of the first full month after Authority to Proceed (ATP), unless otherwise specified by the Contracting Officer.
12. **SUBMISSION FREQUENCY:** Monthly: 10 days following the end of each month.  
Semi-Annually: 10 days following the end of the reporting period.
13. **REMARKS:**
14. **INTERRELATIONSHIP:** PWS paragraph 3.6 and 3.16
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Deficiency Corrective and Preventive Action Report applies to all identified deficient processes, products, and services provided by the Metrology and Calibration Laboratory and/or Valve and Component.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.3 **CONTENTS:** The Deficiency Corrective and Preventative Action Report shall include as a minimum:
  - a. The deficiency.
  - b. Assignment of responsibility for correcting the problem.
  - c. Corrective Action.
  - d. Preventative Action.
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** None required

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163SA-001**
3. **DATA TYPE:** 2
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/8
6. **TITLE:** Safety, Health, and Environmental (SHE) Plan
7. **DESCRIPTION/USE:** A contractor generated document that is written specifically by the contractor for the work that will be conducted at Marshall Space Flight Center (MSFC) or at Michoud Assembly Facility (MAF). The contractor's SHE plan shall describe the specific approach the contractor will use to implement their SHE program at MSFC or MAF while also ensuring it is compliant with the MSFC SHE core program requirements. The contractor's SHE Plan shall describe how the contractor will (1) prevent employee fatalities, (2) reduce the number of incidents, (3) reduce the severity of employee injuries and illnesses, and (4) protect the environment through the ongoing planning, implementation, integration and management control of the contractor's industrial safety, occupational health, and environmental program in accordance with NFS 1852.223-73.
8. **OPR:** AS10/QD12                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** Detailed Draft with proposal
12. **SUBMISSION FREQUENCY:** Ten days after Authority to Proceed (ATP) (including phase-in period); update as required
13. **REMARKS:**
14. **INTERRELATIONSHIP:** NFS 1852.223-70, *Safety and Health*; NFS 1852.223-73, *Safety and Health Plan*; NFS 1823.570, *Drug-and alcohol-free workforce*; FAR 52.223-3, *Hazardous Material Identification and Material Safety Data*; FAR 52.223-4, *Recovered Material Certification*; FAR 52.223-5, *Pollution Prevention and Right-to-Know Information*; FAR 52.223-7, *Notice of Radioactive Materials*; FAR 52.223-9, *Estimate of Percentage of Recovered Material Content for EPA-Designated Products*; FAR 52.223-10, *Waste Reduction Program*; FAR 52.223-11, *Ozone Depleting Substances*; FAR 52.223-12, *Refrigeration Equipment and Air Conditioners*; FAR 52.223-13, *Certification of Toxic Chemical Release Reporting*; and FAR 52.223-14, *Toxic Chemical Release Reporting*. DRD 1163SA-003, *Mishap and Safety Statistics Report*. PWS paragraphs 1.1.2 and 1.3
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Safety, Health, and Environmental Plan shall describe the specific methods the contractor will implement for planning, controlling and enforcing their industrial safety, occupational health, and environmental requirements over the duration of this contracted effort while also ensuring compliance with the MSFC SHE Program requirements.
  - 15.2 **APPLICABLE DOCUMENTS:** Code of Federal Regulations (CFR) and listed consensus standards are applicable to all contracts to the extent specified in the contract. NASA and MSFC documents are applicable to all contracts performed onsite and at MAF to extent specified in the contract.
    - 29 CFR Part 1910                      *Department of Labor; Occupational Safety and Health Administration Standards for General Industry*
    - 29 CFR Part 1926                      *Department of Labor; Occupational Safety and Health Administration Standards for Construction Industry*
    - CFR Title 40 Parts 1-1068                      *Protection of Environment*
    - ANSI Standards applicable to the scope of this contract
    - NFPA Standards                      *National Fire Codes*
    - Executive Order 13423                      *Strengthening Federal Environmental, Energy, and Transportation Management*
    - NASA-STD-8719.11                      *Safety Standard for Fire Protection*

**DRD Continuation Sheet**

TITLE: Safety, Health, and Environmental (SHE) Plan

DRD NO.: **1163SA-001**

DATA TYPE: 2

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15.	<b>DATA PREPARATION INFORMATION (CONTINUED):</b>
NPR 3792.1	<i>Plan for a Drug-Free Workplace</i>
NPR 8715.3	<i>NASA General Safety Program Requirements</i>
MPD 1800.1	<i>MSFC Smoking Policy</i>
MPD 1840.1	<i>MSFC Environmental Health Program</i>
MPD 1840.2	<i>MSFC Hearing Conservation Program</i>
MPD 1840.3	<i>MSFC Respiratory Protection Program</i>
MPD 1860.2	<i>Radiation Safety Program</i>
MPD 8500.1	<i>MSFC Environmental Management Policy</i>
MPD 8570.1	<i>MSFC Energy and Water Management Program</i>
MPR 1040.3	<i>MSFC Emergency Plan</i>
MPR 1800.1	<i>Bloodborne Pathogens</i>
MPR 1800.2	<i>MSFC Ergonomics Program</i>
MPR 1800.3	<i>MSFC Sanitation Program</i>
MPR 1810.1	<i>MSFC Occupational Medicine</i>
MPR 1840.1	<i>MSFC Confined Space Entries</i>
MPR 1840.2	<i>MSFC Hazard Communication Program</i>
MPR 1840.3	<i>MSFC Hazardous Chemicals in Laboratories Protection Program</i>
MPR 1840.4	<i>MSFC Asbestos Program</i>
MPR 1860.1	<i>MSFC Radiation Safety Procedural Requirements</i>
MPR 1860.2	<i>Nonionizing Radiation Safety</i>
MPR 3410.1	<i>Training</i>
MPR 8500.1	<i>MSFC Environmental Management Program</i>
MPR 8500.2	<i>MSFC Environmental Management System (EMS) Manual</i>
MPR 8715.1	<i>Marshall Safety, Health and Environmental (SHE) Program</i>
MWI 1810.1	<i>Automated External Defibrillator (AED) Program</i>
MWI 3410.1	<i>Personnel Certification Program</i>
MWI 8540.2	<i>Green Purchasing Program</i>
MWI 8550.1	<i>Waste Management</i>
MWI 8550.2	<i>Storm Water Management</i>
MWI 8550.3	<i>Wastewater Compliance</i>
MWI 8550.4	<i>Air Emissions Compliance</i>
MWI 8550.5	<i>Chemical Management</i>
MWI 8621.1	<i>Mishap and Close Call Reporting and Investigation Program</i>
MWI 8715.1	<i>Electrical Safety Program</i>
MWI 8715.2	<i>Lockout/Tagout Program</i>
MWI 8715.3	<i>Hazard Identification &amp; Warning System</i>
MWI 8715.4	<i>Personal Protective Equipment (PPE) and Systems</i>
MWI 8715.5	<i>Area/Building Manager Program</i>
MWI 8715.9	<i>Occupational Safety Requirements for MSFC Contractors</i>
MWI 8715.10	<i>Explosives, Propellants, &amp; Pyrotechnics Program</i>
MWI 8715.11	<i>Fire Safety Program</i>
MWI 8715.12	<i>Safety, Health, and Environmental-Finding Tracking System (SHEtrak)</i>
MWI 8715.13	<i>Safety Concerns Reporting System (SCRS)</i>
MWI 8715.15	<i>Operational Safety Assessment Program</i>
MWI 8715.16	<i>Supervisor Safety, Health and Environmental (SHE) Visits</i>
MWI 8715.17	<i>Hazardous Operations Readiness Review Program</i>
MPD 8900.1	<i>Medical Operations Responsibilities for Human Space Flight Programs (NOTE: This document only applies to Space Station contracts)</i>

**DRD Continuation Sheet**

TITLE: Safety, Health, and Environmental (SHE) Plan

DRD NO.: **1163SA-001**

DATA TYPE: 2

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

15.3 **CONTENTS:** The contractor's Safety, Health, and Environmental (SHE) Plan shall be written specifically for the work to be conducted at MSFC or MAF. It shall provide a clear description of the contractor's approach to (1) implementing their SHE program at MSFC, (2) providing a workplace that is incident and injury free, (3) and the methods for ensuring their SHE program is maintained compliant with the following five (5) MSFC SHE Core Program Requirements (CPR) and the applicable documents listed in 15.2 to the extent specified as applicable to this contracted effort. (**NOTE 1:** Contractors can identify innovations and enhancements that are part of their Safety, Health and Environmental Program and go beyond what is required by the MSFC SHE core program requirements. (**NOTE 2:** A contractor's corporate SHE plan is not considered as being written specifically for the work to be conducted at MSFC or MAF and shall not be submitted for consideration.)

## a. CPR 1 - Management Leadership and Employee Involvement:

1. A description of the contractor's safety, health and environmental policy and their management's commitment to (1) initiate a visible and proactive culture in the workplace that values the safety and health of their employees, (2) provide a safe and healthful workplace for their employees, customers, and public that is free from incidents and injuries, (3) evaluate the safety performance of subcontractors or teammates, when applicable, and (4) protect property and the environment over the duration of this contracted effort.
2. A description of methods the contractor will use to ensure compliance with EPA, OSHA, NASA, MPR 8715.1 and all MSFC SHE documents listed in 15.2 that contain requirements applicable to this contracted effort.
3. A description of the methods the contractor will use to ensure employees are encouraged and allowed to participate and be involved in their SHE Program (e.g., participate in safety committees, worksite inspections, accident investigations, the development of job hazard analysis, provide suggestion for improvements to their SHE program and report hazardous working conditions).
4. A description of the methods the contractor will use to ensure managers and employees are (1) encouraged to take responsibility for their safety and health and that of other employees, (2) encouraged to make safety a priority in the performance of their work processes, (3) held accountable to perform their jobs/tasks in a safe and healthful manner while also protecting property and the environment, and (4) fully understand their roles and responsibilities in their SHE Program.
5. A description of the methods the contractor will use to ensure the accountabilities, roles and responsibilities listed in a.4 are also flowed-down to subcontractors or teammates, when applicable.
6. A description of the methods the contractor will use to conduct and document monthly SHE meetings and awareness training for employees. (**NOTE:** Contractors located on-site at MSFC or MAF, when applicable, shall document their monthly SHE awareness training/meeting in the MSFC Supervisors Safety Web page (SSWP).
7. A description of the methods the contractor will use to conduct and document self evaluations of their SHE Program in order to determine its effectiveness. Provide the frequency of these self evaluations.
8. A description of the methods the contractor will use to obtain feedback from employees for their perception about the effectiveness the contractor's SHE Program. Provide the frequency of this feedback.

## DRD Continuation Sheet

TITLE: Safety, Health, and Environmental (SHE) Plan

DRD NO.: 1163SA-001

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### 15. DATA PREPARATION INFORMATION (CONTINUED):

9. A description of the methods the contractor will use to ensure their SHE plan is maintained current with contract, NASA and MSFC requirements, and is reviewed and updated as necessary. Provide the frequency of this review.
  10. Provide the identification, by title, of the individual assigned by the contractor to be responsible to implement the contractor's SHE program elements and designated to serve as the day-to-day SHE Point of Contact (POC) for this contracted effort.
- b. Worksite Analysis:
1. A description of the methods the contractor will use to (1) identify and document concerns/hazards discovered in the work area that have the potential or probability to cause (a) injury/illness to or death to personnel or the public; (b) damage to or loss of facilities/equipment; (c) an undesired outcome that could result in a serious adverse impact on mission capability or operability; or (d) detrimental impact to the environment and the surrounding community, (2) to evaluate these conditions in order to determine their probability of occurrence and potential severity so that adequate control measures can be recommended to eliminate or reduce these concerns/hazards to an acceptable safe working level and (3) to reevaluate the operations/processes when significant changes are made that have the potential to affect the existing control measures that were implemented as a result of a prior worksite analysis. (NOTE: This also includes the identification, evaluation and control of health conditions in order to prevent an occupational disease).
  2. A description of the methods the contractor will use to ensure each contractor supervisor conducts and documents monthly worksite inspections and safety visits to ensure employees (1) are provided with safe and healthful working environment, (2) unsafe and unhealthful conditions are corrected within a timely manner when they are discovered in accordance with MWI 8715.12 and (3) are performing their jobs/tasks/ operations in a safe and healthful manner. (NOTE: Contractor supervisors' located on-site at MSFC or MAF, when applicable, shall perform safety inspections and visits once per month per supervisor and document the results of these visits in the MSFC SSWP, in accordance with MPR 8715.1 and MWI 8715.16. Contractors located off-site shall perform worksite safety inspections as required by OSHA).
  3. A description of the methods the contractor will use to ensure employees are encouraged to report any concern/condition that they feel has the potential to cause (1) injury/illness to or death personnel or the public; (2) damage to or lose of facilities/equipment; (3) an undesired outcome that could result in a serious adverse impact on mission capability or operability; or (4) detrimental impact to the environment and the surrounding community without the fear of reprisal from management, and how these reports are documented and receive a timely response from management to investigate and eliminate the concern/condition. (NOTE: Contractors located on-site at MSFC and MAF, when applicable, can use the reporting process described in MWI 8715.13 as their employee safety concern reporting system).
  4. A description of the methods the contractor will use to ensure all contractor incidents/mishaps and close calls are reported, documented, and investigated to the extent necessary to determine the proximate or root cause(s) in accordance with MWI 8621.1 (Reference DRD 1163SA-003, *Mishap and Safety Statistics Report*).

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TITLE: Safety, Health, and Environmental (SHE) Plan

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15. DATA PREPARATION INFORMATION (CONTINUED):

5. A description of the contractor's policy for conducting post-mishap drug and alcohol testing when the initial mishap investigation provides reason to believe an employee's actions or failure to perform a required action is reasonably suspected of having caused or contributed to causing the mishap in accordance with NPR 3792.1 and MWI 8621.1 (**NOTE:** In the event a mishap results in a fatality or serious injury requiring immediate hospitalization, or substantial damage to property estimated to exceed \$10,000, post-mishap drug and alcohol testing can be required by the government and the results of these tests shall be provided to the MSFC Contracting Officer).
- c. CPR 3 - Hazard Prevention and Control:
1. A description of the methods the contractor will use to (1) review, (2) approve, and (3) verify the effectiveness of the control measures that were recommended and implemented to eliminate, reduce or control the concerns/hazards identified in a worksite analysis required by b.1. (**NOTE:** A concurrence from the MSFC Industrial Safety Branch is required if an operating procedure is developed as a method to eliminate, reduce or control concerns/hazards on-site at MSFC. For operating procedures developed at MAF the MSFC S&MA representative located at MAF provides this concurrence. MSFC and MAF require these procedures to be reviewed annually and updated as necessary).
  2. A description of the methods the contractor will use to ensure they fully comply with the MSFC SHE documented programs listed in 15.2 that contain requirements that are applicable to this contracted effort while working on-site at MSFC (e.g., Personal Protective Equipment (PPE), Respiratory Protection, Hazard Communication, Confined Space Entry, Lockout/Tagout, Bloodborne Pathogens). (**NOTE:** MSFC SHE documented programs listed in 15.2 are also applicable to work conducted at MAF, when applicable. Include contractor programs for work conducted off-site, when applicable).
  3. A description of the methods the contractor will use to ensure (1) an emergency management program is implemented that will respond to all types of emergencies that can occur at their worksite during this contracted effort (e.g., fire, chemical spill, accidents, natural disasters) and (2) all employees are informed and aware of what they are to do, and who they are to contact in the event an emergency occurs. (**NOTE:** Contractors located on-site at MSFC and MAF, when applicable, can use MPR 1040.3 as their emergency management program. A list of emergency phone numbers and points-of-contacts is to be posted at the worksite for employee reference).
  4. A description of the methods the contractor will use to ensure safety, health, and environmental services that are applicable to this contracted effort are provided (i.e., hazardous waste disposal, industrial hygiene monitoring, emergency medical support, hearing conservation program, respiratory protection, and hazard communication, etc.). Provide a list of the environmental and health services that **are not provided** by MSFC or MAF, when applicable.
  5. A description of the methods the contractor will use to ensure all employees are provided with fall protection and protected from potential fall hazards when they are on walking/working surfaces with unprotected sides or edges and the potential exists for them to fall to the next lower level in accordance with 29 CFR Part 1926.501, 29 CFR Part 1926.502, 29 CFR Part 1910.23, and MWI 8715.4 when applicable. (**NOTE:** In cases where it can be demonstrated that the use of

## DRD Continuation Sheet

TITLE: Safety, Health, and Environmental (SHE) Plan

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

conventional fall protection systems are infeasible or greater hazards can be created by using conventional fall protection system an additional "Site Specific Fall Protection Plan" is required and shall be submitted for Government approval).

d. CPR 4 - Safety, Health and Environmental Training:

1. A description of the methods the contractor will use to ensure each contractor employee is informed and trained to (1) recognize conditions in the workplace that have the potential or probability to cause injury/illness or death to personnel or the public; (2) damage to or lose of facilities/equipment; (3) an undesired outcome that could result in a serious adverse impact on mission capability or operability; or (4) detrimental impact to the environment and the surrounding community, and (5) be able to recognize signs and symptoms of workplace-related illnesses. (**NOTE:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
2. A description of the methods the contractor will use to ensure each contractor employee is informed and trained to fully understand they are empowered and authorized to "stop or halt" any activity when they have reason to suspect that the activity is unsafe and has the potential or probability to cause (1) injury/illness to or death personnel or the public; (2) damage to or lose of facilities/equipment; (3) an undesired outcome that could result in a serious adverse impact on mission capability or operability; or (4) detrimental impact to the environment and the surrounding community. (**NOTE 1:** When an activity is "stopped or halted" the activity cannot resume until the condition has been corrected. Onsite at MSFC the Industrial Safety Branch shall be notified and at MAF the S&MA representative shall be notified). (**NOTE 2:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
3. A description of the methods the contractor will use to clearly communicate the contractor's disciplinary policy/program (1) to ensure each contractor employee is trained and fully understands the contractor's disciplinary policy/program, (2) the actions that can be taken by the contractor when an employee is discovered not following safety, health, and environmental policies, procedures and rules, and disciplinary actions are warranted, (3) the actions are equitably enforced to all contractor employees, and (4) the contractor's disciplinary policy/program is flowed-down to subcontractors or teammates, when applicable. (**NOTE:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
4. A description of the methods the contractor will use to evaluate each job/task performed by contractor employees in support of this contracted effort to, (1) identify the specific training required for the employees, and (2) ensure the employees have received the training in order to perform the job/ task in a safe and healthful manner. (**NOTE 1:** Contractors located on-site at MSFC and MAF, when applicable, are to document this evaluation by using the MSFC SHE Training Assessment tool located on the MSFC Supervisor Safety Web Page (SSWP). (**NOTE 2:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
5. A description of the methods the contractor will use to ensure contractor employees receive training and are designated as "qualified" to operate

## DRD Continuation Sheet

TITLE: Safety, Health, and Environmental (SHE) Plan

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

- equipment and machinery, and perform the jobs that they have been assigned in accordance with the applicable parts of 29 CFR 1910. (**NOTE:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
6. A description of the methods the contractor will use to ensure any employee(s) identified to serve in the role of the "competent person" for any operation identified in 29 CFR 1910 or 29 CFR 1926 that require a "competent person" (1) has received the necessary training and experience, (2) is capable of identifying the hazards associated with the operation, (3) has the authority to take the necessary corrective actions, and (4) is knowledgeable of and understands the mandatory and applicable regulations, and standards associated with the equipment or operation, when applicable. (**NOTE:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
  7. A description of the methods the contractor will use to ensure each contractor employee receives the initial MSFC SHE Program Awareness Training within 60 days of the Authority to Proceed (ATP) or their arrival at the worksite and refresher training as required. (**NOTE 1:** Contractors located on-site at MSFC and MAF, when applicable, shall receive, at a minimum, the following training SHE 101, "Introduction to MSFC SHE Program," SHE 102, "MSFC SHE Program Refresher," and SHE 152, "Hazard Warning Signs, Tags and Barricades.") (**NOTE 2:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
  8. A description of the methods the contractor will use to ensure each contractor supervisor receives the required MSFC supervisor training within 90 days of the ATP or arrival at the worksite and refresher training as required. (**NOTE 1:** Contractors located onsite at MSC and MAF, when applicable, shall receive, at a minimum, the following training SHE 106, "SHE Visit Training for Supervisors," SHE 118, "MSFC SHE Training for Managers/Supervisors," and SHE 126, "Job Hazard Analysis.") (**NOTE 2:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested).
  9. A description of the methods the contractor will use to ensure contractor employees receive a MSFC Safety Certification when located on-site at MSFC or MAF, when applicable, and MWI 3410.1, "*Personnel Certification Program*" identifies a safety certification is required for the job/task they are expected to perform in support of this contracted effort. (**NOTE 1:** Contractors located on-site at MSFC and MAF, when applicable, shall document the safety certifications required by MWI 3410.1 in the MSFC Certification Database (CERTRAK). (**NOTE 2:** Contractors shall maintain a record of this training and provide documentation of this training to the Government, when requested.) (**NOTE 3:** Contractors may also be required to also describe this method in accordance with DRD 1163SA-002, "Personnel Certification Plan.") (**NOTE 4:** Training provided by the NASA Safety Training Center (NSTC) may be provided to on-site contractors on a "space available basis." Contractors should not totally rely on MSFC providing training identified for MSFC Safety Certification(s). Contractors may be asked to develop contractor specific training to be used for their employee certifications per CPR 4(10) or obtain equivalent training from an outside training source.
  10. A description of the methods the contractor will use to ensure that a copy of any contractor developed training, used in lieu of MSFC provided training for a

## DRD Continuation Sheet

TITLE: Safety, Health, and Environmental (SHE) Plan

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

MSFC Safety Certification(s), is provided to the MSFC Industrial Safety Branch for approval prior to its use. (**NOTE:** At MAF provide a copy of the training to the MSFC S&MA representative located at MAF for approval prior to use, when applicable).

- e. CPR 5 - Environmental Management System: A description of the methods the contractor will use to ensure compliance with environmental laws and regulations CFR Title 40 Parts 1-1068, Alabama Department of Environmental Management (ADEM), Executive Order 13423 and 13514, and MPR 8500.1 and 8500.2 by:
1. Complying with MWI 8550.5 for reporting and management of chemicals.
  2. Implementing and reporting green procurements in accordance with MWI 8540.2.
  3. Reducing, reusing, and recycling of hazardous and toxic substances prior to disposal in accordance with MPR 8500.1.
  4. Managing storm water pollution in accordance with MWI 8550.2.
  5. Ensuring equipment and processes are permitted by applicable Clean Air Act Title V permit and in accordance with MWI 8550.4.
  6. Managing solid and hazardous waste as permitted by applicable laws in accordance with MWI 8550.1.
  7. Managing wastewater discharges in accordance with MWI 8550.3.

15.4 **FORMAT:** Contractor format is acceptable, but it is recommended for the contractor to follow the order of MSFC SHE CPRs as they are shown in 15.3 or provide a Matrix that clearly links where each MSFC SHE CPR sub-element is addressed in the contractor's SHE Plan. Corporate SHE plans are prohibited from being submitted. The contractor's SHE plan submitted in accordance with this DRD shall be written specifically for the work being performed by the contractor in support of this solicitation.

15.5 **MAINTENANCE:** Changes shall be incorporated by change page or complete reissue.

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163SA-002**
3. **DATA TYPE:** 1
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/2
  
6. **TITLE:** Personnel Certification Plan
  
7. **DESCRIPTION/USE:** To provide the contractor and the Government a baseline document for the identification and definition of personnel certification criteria and the procedures to be implemented by the contractor to ensure a certification program is implemented.
  
8. **OPR:** QD12/QD21/ED01                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** 30 days after Authority to Proceed (ATP), (including phase-in period)
12. **SUBMISSION FREQUENCY:** Revise as required
13. **REMARKS:** Where the contractor is operating under its own quality management system and processes, manufacturing special/critical process personnel qualification/certification controls are not included in this plan, they will be documented as specified in PWS paragraph 1.1.7, DRD 1163QE-001, and contract attachment J-20, NASA MSFC Safety & Mission Assurance Surveillance Plan.
14. **INTERRELATIONSHIP:** PWS paragraphs 1.1.2 and 1.1.3
15. **DATA PREPARATION INFORMATION:**
  - 15.1 **SCOPE:** The Personnel Certification Plan provides for training, certification, and re-certification of personnel engaged in the performance of MSFC critical processes. The purpose of a certification program is to assure that all personnel are capable of performing these MSFC critical processes and work assignments without endangering themselves, fellow employees, equipment and/or facilities. It is mandatory that these MSFC critical processes are performed by experienced and certified personnel and that test facility operations activities be performed by certified personnel.
  - 15.2 **APPLICABLE DOCUMENTS:**

MWI 3410.1	<i>Personnel Certification Program</i>
NPR 8715.3	<i>NASA Safety Manual</i>
  - 15.3 **CONTENTS:** The Personnel Certification Plan shall provide insight to the contractor's certification program. The plan shall include criteria which the contractor can relate directly to work classifications and the required skills, education, experience, training, and other qualifications necessary to perform work in these classifications. The contractor shall assure work performed by these classifications is performed with high quality workmanship to produce a high quality produce in a safe and efficient manner. The plan shall include the contractor methods to track these certifications. The contractor can elect to track their certifications for critical MSFC owned process in MSFC CERTRAK database in accordance with MWI 3410.1. The plan shall fulfill the requirements of the applicable documents listed in 15.2 and include the following:
    - a. Certification program:
      1. General:
        - (a) Program description.
        - (b) Program administration.
        - (c) Certification duration.
        - (d) Definitions.
        - (e) Job description summaries.
        - (f) Task assignments per job description.

## DRD Continuation Sheet

TITLE: Personnel Certification Plan

DRD NO.: **1163SA-002**

DATA TYPE: 1

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

- (g) Skills required per job description.
- 2. Certification requirements/skills:
  - (a) Education.
  - (b) Experience/work history.
  - (c) Specialized training.
  - (d) Physical condition/attitude.
- 3. Certification process:
  - (a) Supervision responsibilities.
  - (b) Certifying authority.
  - (c) Formal/informal examination.
  - (d) Proficiency demonstration.
- b. Certification documentation.

Specific critical MSFC owned process skills requiring certification and proficiency include the following:

- a. High pressure tubing fabrication and assembly.
- b. Welding:
  - 1. Carbon steel.
  - 2. Stainless steel.
  - 3. Aluminum.
- c. Control system operations.
- d. Schematic drawing comprehension.
- e. Other processes identified by the Statement of Work (SOW).

The following certifications, if required, are obtained in accordance with MWI 3410.1.

- a. Forklift, crane and hoist operators.
- b. Cryogenic and other hazardous pressure system operators.
- c. Propellant & Explosive Handlers.
- c. Hazardous chemical/toxic material handling.
- d. Confined space entry.
- e. Electrical/instrumentation cable fabrication (including test articles):
  - 1. Crimping.
  - 2. Cabling, Harnessing, and Wiring.
  - 3. Soldering including Surface Mount Technology (SMT).
  - 4. Staking and Conformal Coating.
  - 5. ESD Control.
- f. Welding inspection and nondestructive evaluation (NDE).
  - 1. Penetrant Testing.
  - 2. Magnetic Particle Testing.
  - 3. Eddy Current Testing.
  - 4. Radiographic Testing.
  - 5. Thermal/Infrared Testing.
  - 6. Visual Testing.

15.4 **FORMAT:** Contractor format is acceptable.

15.5 **MAINTENANCE:** Changes shall be incorporated by change page or complete reissue.

## DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO.:** 1163                      **ISSUE:** Revision F
2. **DRD NO.:** **1163SA-003**
3. **DATA TYPE:** 3
4. **DATE REVISED:** 02-21-12
5. **PAGE:** 1/4
6. **TITLE:** Mishap and Safety Statistics Reports
7. **DESCRIPTION/USE:** To provide initial and follow-up reporting of mishaps, close calls, serious non-occupational injuries or illnesses, and contractor monthly safety metrics to the government.
8. **OPR:** QD12                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:**
  - a. **Safety Statistics** shall be submitted by the 10<sup>th</sup> of each month after Authority to Proceed (ATP) or contract award. The safety statistics shall be for the contractor's previous month's work. The contractor monthly safety statistics shall be sent to the MSFC Industrial Safety Branch or the Primary SMAR identified in Contract **Attachment J-20 - NASA MSFC Safety and Mission Assurance (S&MA) Surveillance Plan Responsibilities and Requirements, Part A - General NASA Contract Quality Management System Monitoring and Surveillance, paragraph 2a.** If work is performed at Michoud Assembly Facility (MAF) the contractor monthly safety statistics shall be submitted to the MSFC Safety and Mission Assurance (S&MA) representative located at MAF.
    1. Safety statistics shall be reported using MSFC Form 4371 or an equivalent electronic notification system that includes the information listed in 11.a.2.
    2. Safety statistics reports shall include: contract number, subcontractors, NAISC codes and the following for the reporting period: number of employees, number of supervisors, hours worked, and number of injuries including days away from work and/or first-aid cases, number of incidents involving equipment or property damage, and number of supervisors and employees up-to-date with required MSFC Safety, Health, and Environmental (SHE) Training. (SHE training is only applicable to onsite contracts.)
  - b. **Initial reporting for Type A, Type B, and Type C that involves a lost time injury or illness, and any High-Visibility Close Calls** for ALL contractors working onsite shall be reported to MSFC Industrial Safety Branch as soon as possible after initiating emergency response, but **no later than 1 hour** of occurrence or awareness. For these types of mishaps the initial notification can be made by calling the Safety Hotline (256) 544-0046 then followed up within 24 hours with an entry into the NASA Incident Reporting Information System (IRIS) by the contractor designated IRIS representative. At MAF call (504) 257-2526.
  - c. **Initial reporting for Type C that does not involve a lost time injury or illness, Type D, and Low-Visibility Close Calls** for ALL contractors working onsite shall be reported to the MSFC Industrial Safety Branch as soon as possible after initiating emergency response, but **no later than 4 hours** of occurrence or awareness by:
    1. Direct input through the "SHE Report" located on the Safety, Health & Environmental (SHE) webpage located on "Inside Marshall." On the SHE webpage select the "Mishaps, Questions and Concerns" pull-down menu, then select "Report Mishaps/Close Calls/Concerns." (At MSFC this is the preferred method of reporting), or
    2. Calling the Safety Hotline (256) 544-0046, [at MAF call (504) 257-2526] or

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11. **INITIAL SUBMISSION (CONTINUED):**

3. Direct input into the NASA Incident Reporting Information System (IRIS) by the contractor designated IRIS representative. Access to IRIS database can be obtained from the MSFC S&MA IRIS administrator located in the MSFC Industrial Safety Branch after contract award.
- d. **Initial reporting for Type A, Type B, Type C that involves a lost time injury or illness, and any High-Visibility Close Calls** for contractors working **offsite** shall be reported to MSFC Industrial Safety Branch as soon as possible after initiating emergency response, but **no later than 1 hour** of occurrence or awareness by calling the Safety Hotline (256) 544-0046 then followed up within 24 hours with an entry into the NASA Incident Reporting Information System (IRIS) by the contractor designated IRIS representative.
  1. If a contractor employee has any type mishap while visiting a MSFC controlled site, they shall report immediately to their site sponsor in addition to other reporting requirements.
- e. **Initial reporting for Type C that does not involve a lost time injury or illness, and D and Low-Visibility Close Calls** for contractors working **offsite** shall be reported via the Safety Statistics Report submitted monthly.
- f. **Initial reports for all mishaps and Close Calls** shall provide as much information as possible, but at a minimum include the following: location and time of incident, number of fatalities, number hospitalized, type of damage, estimated cost, brief description, and contact person's name and phone number in accordance with MWI 8621.1 and NPR 8621.1.
- g. **Reporting of a non-work-related fatality or serious injury or illnesses that occur to contractor employee while working onsite shall be within 24 hours** of occurrence or awareness of injury by:
  1. Notifying the Contracting Officer and MSFC Industrial Safety Branch. (For contractors working offsite reporting of a non-work-related injury or illness notification is at the discretion of the family.)
- h. **Follow-up reporting for ALL contractors:**
  1. **Type A or B mishaps, Type C that involves a lost time injury or illness, or High-Visibility Close Calls:** Follow-up report **within 24 hours** after the initial notification through IRIS entry by the contractor designated IRIS representative, or electronic submittal to MSFC Industrial Safety Branch.
  2. **Type C that does not involve a lost time injury or illness, or D mishaps, or Low-Visibility Close Calls:** Follow-up report or update **within 6 days** after the initial notification through IRIS entry by the contractor designated IRIS representative, or electronic submittal to MSFC Industrial Safety Branch.
  3. **Type A, B, and Close Calls with High-Visibility Type A or B potential Investigation Mishap Board Report:** submitted after completion of investigation. Corrective Action Plan submitted upon Endorsing Official approval.
  4. **All Mishaps:** Follow-up Corrective Action Plan/Status 30 days after first mishap.
- i. **Safety Concerns, Hazards, and non-reportable mishaps** for contractors working **onsite** shall be reported per MPR 8715.1 and MWI 8715.13.
- j. Mishaps and Close Calls that occur at MAF shall be reported within the times specified in sections a thru g to the MSFC S&MA representative located at MAF by calling (504) 257-2526.
- k. Follow-up reporting for mishaps and Close Calls reported at MAF shall be reported within the times specified in section h to the MSFC S&MA representative located at MAF.

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

12. **SUBMISSION FREQUENCY:** Safety Statistics (MSFC Form 4371, IRIS entry, or an equivalent electronic submittal) - By the 10<sup>th</sup> of each month to MSFC Industrial Safety Branch or for work performed at MAF to the MSFC S&MA representative located at MAF. All Mishaps: Monthly Follow-up Corrective Action Plan/Status until corrective actions implemented and closure received by updating record in IRIS data base (preferred) or electronic submittal to MSFC Industrial Safety Branch or for work performed at MAF to the MSFC S&MA representative located at MAF.

13. **REMARKS:**

14. **INTERRELATIONSHIP:** DRD 1163SA-001, *Safety, Health, and Environmental (SHE) Plan*. PWS paragraph 1.3

15. **DATA PREPARATION INFORMATION:**

15.1 **SCOPE:** The Mishap and Safety Statistics Reports document all mishaps and close calls as required in NPR 8621.1.

15.2 **APPLICABLE DOCUMENTS:**

NPR 8621.1 *NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping*

MPR 8715.1 *Marshall Safety, Health, and Environmental (SHE) Program*

MWI 8621.1 *Mishap and Close Call Reporting and Investigation Program*

MWI 8715.13 *Safety Concerns Reporting System (SCRS)*

15.3 **CONTENTS:** Initial and follow-up mishap reports shall contain all information required by NPR 8621.1 and MWI 8621.1. Mishap and Safety Statistics Reports shall contain the information listed in 11.a.2 and on the MSFC Form 4371.

15.4 **FORMAT:** The following formats or electronic equivalent shall be submitted:

- MSFC Form 4371, "MSFC Contractor Accident and Safety Statistics" or an equivalent electronic notification system that provides all necessary information listed in a.2.
- Mishap Board Report using the format provided in NPR 8621.1.
- Additional Information Submittal per MWI 8621.1.

15.5 **MAINTENANCE:** None required

15.6 **DEFINITIONS:** NASA Mishap. An unplanned event that results in at least one of the following:

- Injury to non-NASA personnel, caused by NASA operations.
- Damage to public or private property (including foreign property), caused by NASA operations or NASA-funded development or research projects.
- Occupational injury or occupational illness to NASA personnel.
- NASA mission failure before the scheduled completion of the planned primary mission.
- Destruction of, or damage to, NASA property except for a malfunction or failure of component parts that are normally subject to fair wear and tear and have a fixed useful life that is less than

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15. **DATA PREPARATION INFORMATION (CONTINUED):**

the fixed useful life of the complete system or unit of equipment, provided that the following are true: 1) there was adequate preventative maintenance; and 2) the malfunction or failure was the only damage and the sole action is to replace or repair that component.

Close Call. An event in which there is no injury or only minor injury requiring first aid and/or no equipment/ property damage or minor equipment/property damage (less than \$1000), but which possesses a potential to cause a mishap.

High Visibility (Mishaps or Close Calls). Those particular mishaps or close calls, regardless of the amount of property damage or personnel injury, that the Administrator, Chief/OSMA, CD, AA/OIA, or the Center SMA director judges to possess a high degree of programmatic impact or public, media, or political interest including, but not limited to, mishaps and close calls that impact flight hardware, flight software, or completion of critical mission milestones.

Type A Mishap. A mishap resulting in one or more of the following: (1) an occupational injury or illness resulting in a fatality, a permanent total disability, or the hospitalization for inpatient care of 3 or more people within 30 workdays of the mishap; (2) a total direct cost of mission failure and property damage of \$1 million or more; (3) a crewed aircraft hull loss; (4) an occurrence of an unexpected aircraft departure from controlled flight (except high performance jet/test aircraft such as F-15, F-16, F/A-18, T-38, OV-10, and T-34, when engaged in flight test activities).

Type B Mishap. A mishap that caused an occupational injury or illness that resulted in a permanent partial disability, the hospitalization for inpatient care of 1-2 people within 30 workdays of the mishap, or a total direct cost of mission failure and property damage of at least \$250,000 but less than \$1,000,000.

Type C Mishap. A mishap resulting in a nonfatal occupational injury or illness that caused any days away from work, restricted duty, or transfer to another job beyond the day or shift on which it occurred, or a total direct cost of mission failure and property damage of at least \$25,000 but less than \$250,000.

Type D Mishap. A mishap that caused any nonfatal OSHA recordable occupational injury and/or illness that does not meet the definition of a Type C mishap, or a total direct cost of mission failure and property damage of at least \$1,000 but less than \$25,000.

Offsite. Location or facility **not** owned or controlled by MSFC.

Onsite. Location or facility owned or controlled by MSFC.

**DATA REQUIREMENTS DESCRIPTION (DRD)**

- |    |               |                   |    |                            |
|----|---------------|-------------------|----|----------------------------|
| 1. | DPD NO.: 1163 | ISSUE: Revision F | 2. | DRD NO.: <b>1163SA-004</b> |
| 3. | DATA TYPE: 3  |                   | 4. | DATE REVISED: 02-21-12     |
|    |               |                   | 5. | PAGE: 1/1                  |
6. **TITLE:** Air Emissions Reports
7. **DESCRIPTION/USE:** To provide actual run times and fuel usage for diesel engines located at B4567 and B4667 and to provide the propane usage at 4657 for MSFC. The Official File Numbers are 8530.4.E.4.
8. **OPR:** AS10                      9. **DM:** ES01
10. **DISTRIBUTION:** Per Contracting Officer's letter
11. **INITIAL SUBMISSION:** 45 days after Authority to Proceed (ATP)
12. **SUBMISSION FREQUENCY:** Monthly; 10 days following the end of the month
13. **REMARKS:** Reference is made to Clean Air Act Title V Permit and Major Source operating Permit NASA-MSFC.
14. **INTERRELATIONSHIP:** PWS paragraph 1.3
15. **DATA PREPARATION INFORMATION:**
- 15.1 **SCOPE:** The Air Emissions Report establishes the requirement for collection of hourly engine meter data and diesel fuel usage for the four diesel engines at B4567, the thirteen diesel engines at B4667, and the propane usage at 4657. The report will include the serial number for each engine and any other corrective actions associated with that engine.
- 15.2 **APPLICABLE DOCUMENTS:** None
- 15.5 **CONTENTS:** The Air Emissions Report provides the meter run times and fuel usage for each diesel engine and the propane usage.
- Records of monthly and twelve (12) month rolling totals of fuel usage shall be maintained for inspection for a period of five (5) years from the date the fuel oil is consumed. Data submitted to procuring activity for review no later than three weeks prior to project implementation. Data shall be considered approved unless Contractor has been notified of disapproval prior to project implementation.
- The two Caterpillar engines at B4567 fuel usage shall not exceed 163,741 gallons during any consecutive 12 month period.
- 15.4 **FORMAT:** Contractor format is acceptable.
- 15.5 **MAINTENANCE:** None required

Pages 108 through 114 redacted for the following reasons:

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(b)(4), (b)(4) Fully Burdened Labor Rates

**Attachment J-15**

WD 05-2007 (Rev.-15) was first posted on www.wdol.gov on 06/17/2011

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REGISTER OF WAGE DETERMINATIONS UNDER		U.S. DEPARTMENT OF LABOR
THE SERVICE CONTRACT ACT		EMPLOYMENT STANDARDS ADMINISTRATION
By direction of the Secretary of Labor		WAGE AND HOUR DIVISION
		WASHINGTON D.C. 20210

Diane C. Koplewski	Division of		<b>Wage Determination No.:</b> 2005-2007
Director	Wage Determinations		Revision No.: <b>15</b>
			Date Of Revision: <b>06/13/2011</b>

States: Alabama, Tennessee

Area: Alabama Counties of Colbert, Franklin, Jackson, Lauderdale, Lawrence, Limestone, **Madison**, Marion, Marshall, Morgan, Winston  
 Tennessee Counties of Giles, Lawrence, Lincoln, Moore, Wayne

\*\*Fringe Benefits Required Follow the Occupational Listing\*\*

OCCUPATION CODE - TITLE	FOOTNOTE	RATE
01000 - Administrative Support And Clerical Occupations		
01011 - Accounting Clerk I		13.47
01012 - Accounting Clerk II		14.65
01013 - Accounting Clerk III		16.77
01020 - Administrative Assistant		21.27
01040 - Court Reporter		17.16
01051 - Data Entry Operator I		11.95
01052 - Data Entry Operator II		13.89
01060 - Dispatcher, Motor Vehicle		16.31
01070 - Document Preparation Clerk		12.47
01090 - Duplicating Machine Operator		12.47
01111 - General Clerk I		10.88
01112 - General Clerk II		11.87
01113 - General Clerk III		13.86
01120 - Housing Referral Assistant		19.14
01141 - Messenger Courier		10.07
01191 - Order Clerk I		12.66
01192 - Order Clerk II		15.27
01261 - Personnel Assistant (Employment) I		14.18
01262 - Personnel Assistant (Employment) II		15.86
01263 - Personnel Assistant (Employment) III		17.70
01270 - Production Control Clerk		19.18
01280 - Receptionist		11.86
01290 - Rental Clerk		12.97
01300 - Scheduler, Maintenance		15.32
01311 - Secretary I		15.32
01312 - Secretary II		17.16
01313 - Secretary III		19.14
01320 - Service Order Dispatcher		13.83
01410 - Supply Technician		21.27
01420 - Survey Worker		16.81
01531 - Travel Clerk I		11.08
01532 - Travel Clerk II		11.72
01533 - Travel Clerk III		12.50
01611 - Word Processor I		13.12
01612 - Word Processor II		14.73
01613 - Word Processor III		16.48
05000 - Automotive Service Occupations		
05005 - Automobile Body Repairer, Fiberglass		19.25
05010 - Automotive Electrician		18.61
05040 - Automotive Glass Installer		17.74
05070 - Automotive Worker		17.74
05110 - Mobile Equipment Servicer		16.08
05130 - Motor Equipment Metal Mechanic		19.47
05160 - Motor Equipment Metal Worker		17.74

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05190 - Motor Vehicle Mechanic	17.78
05220 - Motor Vehicle Mechanic Helper	13.93
05250 - Motor Vehicle Upholstery Worker	16.93
05280 - Motor Vehicle Wrecker	17.74
05310 - Painter, Automotive	17.00
05340 - Radiator Repair Specialist	17.74
05370 - Tire Repairer	12.75
05400 - Transmission Repair Specialist	19.47
07000 - Food Preparation And Service Occupations	
07010 - Baker	11.24
07041 - Cook I	9.14
07042 - Cook II	10.27
07070 - Dishwasher	7.82
07130 - Food Service Worker	8.09
07210 - Meat Cutter	14.21
07260 - Waiter/Waitress	7.90
09000 - Furniture Maintenance And Repair Occupations	
09010 - Electrostatic Spray Painter	17.56
09040 - Furniture Handler	13.94
09080 - Furniture Refinisher	17.56
09090 - Furniture Refinisher Helper	14.41
09110 - Furniture Repairer, Minor	15.98
09130 - Upholsterer	17.56
11000 - General Services And Support Occupations	
11030 - Cleaner, Vehicles	10.28
11060 - Elevator Operator	10.02
11090 - Gardener	12.11
11122 - Housekeeping Aide	10.02
11150 - Janitor	10.02
11210 - Laborer, Grounds Maintenance	10.00
11240 - Maid or Houseman	8.67
11260 - Pruner	9.28
11270 - Tractor Operator	12.08
11330 - Trail Maintenance Worker	10.00
11360 - Window Cleaner	10.97
12000 - Health Occupations	
12010 - Ambulance Driver	15.85
12011 - Breath Alcohol Technician	16.00
12012 - Certified Occupational Therapist Assistant	21.95
12015 - Certified Physical Therapist Assistant	21.95
12020 - Dental Assistant	16.00
12025 - Dental Hygienist	22.48
12030 - EKG Technician	23.45
12035 - Electroneurodiagnostic Technologist	23.45
12040 - Emergency Medical Technician	15.85
12071 - Licensed Practical Nurse I	14.30
12072 - Licensed Practical Nurse II	16.00
12073 - Licensed Practical Nurse III	17.84
12100 - Medical Assistant	11.87
12130 - Medical Laboratory Technician	14.07
12160 - Medical Record Clerk	12.41
12190 - Medical Record Technician	14.96
12195 - Medical Transcriptionist	13.59
12210 - Nuclear Medicine Technologist	30.65
12221 - Nursing Assistant I	9.43
12222 - Nursing Assistant II	10.61
12223 - Nursing Assistant III	11.57
12224 - Nursing Assistant IV	12.99
12235 - Optical Dispenser	15.05
12236 - Optical Technician	12.56
12250 - Pharmacy Technician	13.36
12280 - Phlebotomist	12.99
12305 - Radiologic Technologist	23.95
12311 - Registered Nurse I	22.94
12312 - Registered Nurse II	28.08
12313 - Registered Nurse II, Specialist	28.08

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12314 - Registered Nurse III	33.97
12315 - Registered Nurse III, Anesthetist	33.97
12316 - Registered Nurse IV	40.70
12317 - Scheduler (Drug and Alcohol Testing)	19.83
13000 - Information And Arts Occupations	
13011 - Exhibits Specialist I	20.09
13012 - Exhibits Specialist II	24.89
13013 - Exhibits Specialist III	30.45
13041 - Illustrator I	20.09
13042 - Illustrator II	24.89
13043 - Illustrator III	30.45
13047 - Librarian	27.56
13050 - Library Aide/Clerk	15.94
13054 - Library Information Technology Systems Administrator	24.89
13058 - Library Technician	16.14
13061 - Media Specialist I	17.96
13062 - Media Specialist II	20.09
13063 - Media Specialist III	22.40
13071 - Photographer I	16.19
13072 - Photographer II	18.70
13073 - Photographer III	22.40
13074 - Photographer IV	27.38
13075 - Photographer V	33.23
13110 - Video Teleconference Technician	17.96
14000 - Information Technology Occupations	
14041 - Computer Operator I	15.55
14042 - Computer Operator II	19.13
14043 - Computer Operator III	20.49
14044 - Computer Operator IV	26.16
14045 - Computer Operator V	27.62
14071 - Computer Programmer I	25.00
14072 - Computer Programmer II	(see 1)
14073 - Computer Programmer III	(see 1)
14074 - Computer Programmer IV	(see 1)
14101 - Computer Systems Analyst I	(see 1)
14102 - Computer Systems Analyst II	(see 1)
14103 - Computer Systems Analyst III	(see 1)
14150 - Peripheral Equipment Operator	15.55
14160 - Personal Computer Support Technician	26.16
15000 - Instructional Occupations	
15010 - Aircrew Training Devices Instructor (Non-Rated)	29.35
15020 - Aircrew Training Devices Instructor (Rated)	35.52
15030 - Air Crew Training Devices Instructor (Pilot)	36.76
15050 - Computer Based Training Specialist / Instructor	30.38
15060 - Educational Technologist	30.52
15070 - Flight Instructor (Pilot)	36.76
15080 - Graphic Artist	22.01
15090 - Technical Instructor	18.91
15095 - Technical Instructor/Course Developer	23.11
15110 - Test Proctor	17.16
15120 - Tutor	17.16
16000 - Laundry, Dry-Cleaning, Pressing And Related Occupations	
16010 - Assembler	8.30
16030 - Counter Attendant	8.30
16040 - Dry Cleaner	10.44
16070 - Finisher, Flatwork, Machine	8.30
16090 - Presser, Hand	8.30
16110 - Presser, Machine, Drycleaning	8.30
16130 - Presser, Machine, Shirts	8.30
16160 - Presser, Machine, Wearing Apparel, Laundry	8.30
16190 - Sewing Machine Operator	11.03
16220 - Tailor	11.64
16250 - Washer, Machine	9.00
19000 - Machine Tool Operation And Repair Occupations	
19010 - Machine-Tool Operator (Tool Room)	24.44

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19040 - Tool And Die Maker	29.82
21000 - Materials Handling And Packing Occupations	
21020 - Forklift Operator	14.82
21030 - Material Coordinator	19.18
21040 - Material Expediter	19.18
21050 - Material Handling Laborer	10.48
21071 - Order Filler	10.87
21080 - Production Line Worker (Food Processing)	14.82
21110 - Shipping Packer	12.98
21130 - Shipping/Receiving Clerk	12.98
21140 - Store Worker I	12.06
21150 - Stock Clerk	16.35
21210 - Tools And Parts Attendant	14.82
21410 - Warehouse Specialist	14.82
23000 - Mechanics And Maintenance And Repair Occupations	
23010 - Aerospace Structural Welder	20.61
23021 - Aircraft Mechanic I	22.24
23022 - Aircraft Mechanic II	23.35
23023 - Aircraft Mechanic III	24.52
23040 - Aircraft Mechanic Helper	17.44
23050 - Aircraft, Painter	19.32
23060 - Aircraft Servicer	19.34
23080 - Aircraft Worker	20.27
23110 - Appliance Mechanic	18.04
23120 - Bicycle Repairer	14.66
23125 - Cable Splicer	19.76
23130 - Carpenter, Maintenance	17.56
23140 - Carpet Layer	17.29
23160 - Electrician, Maintenance	23.21
23181 - Electronics Technician Maintenance I	19.44
23182 - Electronics Technician Maintenance II	25.55
23183 - Electronics Technician Maintenance III	26.62
23260 - Fabric Worker	16.54
23290 - Fire Alarm System Mechanic	18.79
23310 - Fire Extinguisher Repairer	15.72
23311 - Fuel Distribution System Mechanic	18.79
23312 - Fuel Distribution System Operator	16.80
23370 - General Maintenance Worker	16.43
23380 - Ground Support Equipment Mechanic	22.24
23381 - Ground Support Equipment Servicer	19.34
23382 - Ground Support Equipment Worker	20.27
23391 - Gunsmith I	15.48
23392 - Gunsmith II	17.06
23393 - Gunsmith III	18.83
23410 - Heating, Ventilation And Air-Conditioning Mechanic	18.38
23411 - Heating, Ventilation And Air Contditioning Mechanic (Research Facility)	19.30
23430 - Heavy Equipment Mechanic	20.43
23440 - Heavy Equipment Operator	17.87
23460 - Instrument Mechanic	22.82
23465 - Laboratory/Shelter Mechanic	17.99
23470 - Laborer	11.36
23510 - Locksmith	18.04
23530 - Machinery Maintenance Mechanic	23.32
23550 - Machinist, Maintenance	18.59
23580 - Maintenance Trades Helper	14.41
23591 - Metrology Technician I	22.82
23592 - Metrology Technician II	23.80
23593 - Metrology Technician III	24.74
23640 - Millwright	20.67
23710 - Office Appliance Repairer	22.90
23760 - Painter, Maintenance	17.56
23790 - Pipefitter, Maintenance	19.29
23810 - Plumber, Maintenance	18.43
23820 - Pneudraulic Systems Mechanic	18.83

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23850 - Rigger	18.83
23870 - Scale Mechanic	17.29
23890 - Sheet-Metal Worker, Maintenance	18.81
23910 - Small Engine Mechanic	17.06
23931 - Telecommunications Mechanic I	18.89
23932 - Telecommunications Mechanic II	20.87
23950 - Telephone Lineman	19.60
23960 - Welder, Combination, Maintenance	18.38
23965 - Well Driller	18.83
23970 - Woodcraft Worker	18.83
23980 - Woodworker	16.43
24000 - Personal Needs Occupations	
24570 - Child Care Attendant	8.56
24580 - Child Care Center Clerk	10.68
24610 - Chore Aide	10.19
24620 - Family Readiness And Support Services Coordinator	12.61
24630 - Homemaker	13.55
25000 - Plant And System Operations Occupations	
25010 - Boiler Tender	20.75
25040 - Sewage Plant Operator	19.88
25070 - Stationary Engineer	20.75
25190 - Ventilation Equipment Tender	14.85
25210 - Water Treatment Plant Operator	19.88
27000 - Protective Service Occupations	
27004 - Alarm Monitor	13.83
27007 - Baggage Inspector	10.85
27008 - Corrections Officer	15.28
27010 - Court Security Officer	16.82
27030 - Detection Dog Handler	13.55
27040 - Detention Officer	15.28
27070 - Firefighter	16.82
27101 - Guard I	10.85
27102 - Guard II	13.55
27131 - Police Officer I	18.64
27132 - Police Officer II	20.71
28000 - Recreation Occupations	
28041 - Carnival Equipment Operator	10.11
28042 - Carnival Equipment Repairer	10.62
28043 - Carnival Equipment Worker	8.38
28210 - Gate Attendant/Gate Tender	14.06
28310 - Lifeguard	12.21
28350 - Park Attendant (Aide)	15.73
28510 - Recreation Aide/Health Facility Attendant	11.48
28515 - Recreation Specialist	17.94
28630 - Sports Official	12.53
28690 - Swimming Pool Operator	15.65
29000 - Stevedoring/Longshoremen Occupational Services	
29010 - Blocker And Bracer	17.70
29020 - Hatch Tender	17.70
29030 - Line Handler	17.70
29041 - Stevedore I	16.90
29042 - Stevedore II	18.56
30000 - Technical Occupations	
30010 - Air Traffic Control Specialist, Center (HFO) (see 2)	35.77
30011 - Air Traffic Control Specialist, Station (HFO) (see 2)	24.66
30012 - Air Traffic Control Specialist, Terminal (HFO) (see 2)	27.16
30021 - Archeological Technician I	18.60
30022 - Archeological Technician II	20.81
30023 - Archeological Technician III	25.48
30030 - Cartographic Technician	25.48
30040 - Civil Engineering Technician	22.83
30061 - Drafter/CAD Operator I	18.60
30062 - Drafter/CAD Operator II	20.81
30063 - Drafter/CAD Operator III	23.21
30064 - Drafter/CAD Operator IV	28.55

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30081 - Engineering Technician I	15.98
30082 - Engineering Technician II	18.00
30083 - Engineering Technician III	21.00
30084 - Engineering Technician IV	28.62
30085 - Engineering Technician V	33.81
30086 - Engineering Technician VI	40.89
30090 - Environmental Technician	25.48
30210 - Laboratory Technician	18.92
30240 - Mathematical Technician	25.48
30361 - Paralegal/Legal Assistant I	18.54
30362 - Paralegal/Legal Assistant II	22.98
30363 - Paralegal/Legal Assistant III	28.11
30364 - Paralegal/Legal Assistant IV	34.01
30390 - Photo-Optics Technician	25.48
30461 - Technical Writer I	21.30
30462 - Technical Writer II	26.06
30463 - Technical Writer III	31.52
30491 - Unexploded Ordnance (UXO) Technician I	22.74
30492 - Unexploded Ordnance (UXO) Technician II	27.51
30493 - Unexploded Ordnance (UXO) Technician III	32.97
30494 - Unexploded (UXO) Safety Escort	22.74
30495 - Unexploded (UXO) Sweep Personnel	22.74
30620 - Weather Observer, Combined Upper Air Or	(see 3) 23.21
Surface Programs	
30621 - Weather Observer, Senior	(see 3) 25.48
31000 - Transportation/Mobile Equipment Operation Occupations	
31020 - Bus Aide	10.71
31030 - Bus Driver	13.94
31043 - Driver Courier	14.96
31260 - Parking and Lot Attendant	10.11
31290 - Shuttle Bus Driver	16.25
31310 - Taxi Driver	10.90
31361 - Truckdriver, Light	16.25
31362 - Truckdriver, Medium	16.82
31363 - Truckdriver, Heavy	17.62
31364 - Truckdriver, Tractor-Trailer	17.62
99000 - Miscellaneous Occupations	
99030 - Cashier	9.30
99050 - Desk Clerk	8.43
99095 - Embalmer	22.74
99251 - Laboratory Animal Caretaker I	8.61
99252 - Laboratory Animal Caretaker II	13.46
99310 - Mortician	22.65
99410 - Pest Controller	12.76
99510 - Photofinishing Worker	11.95
99710 - Recycling Laborer	14.15
99711 - Recycling Specialist	16.30
99730 - Refuse Collector	12.79
99810 - Sales Clerk	11.63
99820 - School Crossing Guard	12.71
99830 - Survey Party Chief	17.75
99831 - Surveying Aide	10.94
99832 - Surveying Technician	14.97
99840 - Vending Machine Attendant	13.90
99841 - Vending Machine Repairer	15.93
99842 - Vending Machine Repairer Helper	13.90

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ALL OCCUPATIONS LISTED ABOVE RECEIVE THE FOLLOWING BENEFITS:

HEALTH & WELFARE: \$3.59 per hour or \$143.60 per week or \$622.27 per month

VACATION: 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 10 years, and 4 after 20 years. Length of service includes

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the whole span of continuous service with the present contractor or successor, wherever employed, and with the predecessor contractors in the performance of similar work at the same Federal facility. (Reg. 29 CFR 4.173)

HOLIDAYS: A minimum of ten paid holidays per year, New Year's Day, Martin Luther King Jr's Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. (A contractor may substitute for any of the named holidays another day off with pay in accordance with a plan communicated to the employees involved.) (See 29 CFR 4174)

THE OCCUPATIONS WHICH HAVE NUMBERED FOOTNOTES IN PARENTHESES RECEIVE THE FOLLOWING:

1) COMPUTER EMPLOYEES: Under the SCA at section 8(b), this wage determination does not apply to any employee who individually qualifies as a bona fide executive, administrative, or professional employee as defined in 29 C.F.R. Part 541. Because most Computer System Analysts and Computer Programmers who are compensated at a rate not less than \$27.63 (or on a salary or fee basis at a rate not less than \$455 per week) an hour would likely qualify as exempt computer professionals, (29 C.F.R. 541.400) wage rates may not be listed on this wage determination for all occupations within those job families. In addition, because this wage determination may not list a wage rate for some or all occupations within those job families if the survey data indicates that the prevailing wage rate for the occupation equals or exceeds \$27.63 per hour conformances may be necessary for certain nonexempt employees. For example, if an individual employee is nonexempt but nevertheless performs duties within the scope of one of the Computer Systems Analyst or Computer Programmer occupations for which this wage determination does not specify an SCA wage rate, then the wage rate for that employee must be conformed in accordance with the conformance procedures described in the conformance note included on this wage determination.

Additionally, because job titles vary widely and change quickly in the computer industry, job titles are not determinative of the application of the computer professional exemption. Therefore, the exemption applies only to computer employees who satisfy the compensation requirements and whose primary duty consists of:

(1) The application of systems analysis techniques and procedures, including consulting with users, to determine hardware, software or system functional specifications;

(2) The design, development, documentation, analysis, creation, testing or modification of computer systems or programs, including prototypes, based on and related to user or system design specifications;

(3) The design, documentation, testing, creation or modification of computer programs related to machine operating systems; or

(4) A combination of the aforementioned duties, the performance of which requires the same level of skills. (29 C.F.R. 541.400).

2) APPLICABLE TO AIR TRAFFIC CONTROLLERS ONLY - NIGHT DIFFERENTIAL: An employee is entitled to pay for all work performed between the hours of 6:00 P.M. and 6:00 A.M. at the rate of basic pay plus a night pay differential amounting to 10 percent of the rate of basic pay.

3) AIR TRAFFIC CONTROLLERS AND WEATHER OBSERVERS - NIGHT PAY & SUNDAY PAY: If you work at night as part of a regular tour of duty, you will earn a night differential and receive an additional 10% of basic pay for any hours worked between 6pm and 6am. If you are a full-time employed (40 hours a week) and Sunday is part of your regularly scheduled workweek, you are paid at your rate of basic pay plus a Sunday premium of 25% of your basic rate for each hour of Sunday work which is not overtime (i.e. occasional work on Sunday outside the normal tour of duty is considered overtime work).

HAZARDOUS PAY DIFFERENTIAL: An 8 percent differential is applicable to employees employed in a position that represents a high degree of hazard when working with or in close proximity to ordinance, explosives, and incendiary materials. This includes work such as screening, blending, dying, mixing, and pressing of sensitive

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ordnance, explosives, and pyrotechnic compositions such as lead azide, black powder and photoflash powder. All dry-house activities involving propellants or explosives.

Demilitarization, modification, renovation, demolition, and maintenance operations on sensitive ordnance, explosives and incendiary materials. All operations involving regrading and cleaning of artillery ranges.

A 4 percent differential is applicable to employees employed in a position that represents a low degree of hazard when working with, or in close proximity to ordnance, (or employees possibly adjacent to) explosives and incendiary materials which involves potential injury such as laceration of hands, face, or arms of the employee engaged in the operation, irritation of the skin, minor burns and the like; minimal damage to immediate or adjacent work area or equipment being used. All operations involving, unloading, storage, and hauling of ordnance, explosive, and incendiary ordnance material other than small arms ammunition. These differentials are only applicable to work that has been specifically designated by the agency for ordnance, explosives, and incendiary material differential pay.

### \*\* UNIFORM ALLOWANCE \*\*

If employees are required to wear uniforms in the performance of this contract (either by the terms of the Government contract, by the employer, by the state or local law, etc.), the cost of furnishing such uniforms and maintaining (by laundering or dry cleaning) such uniforms is an expense that may not be borne by an employee where such cost reduces the hourly rate below that required by the wage determination. The Department of Labor will accept payment in accordance with the following standards as compliance:

The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of \$3.35 per week (or \$.67 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations", Fifth Edition, April 2006, unless otherwise indicated. Copies of the Directory are available on the Internet. A links to the Directory may be found on the WHD home page at <http://www.dol.gov/esa/whd/> or through the Wage Determinations On-Line (WDOL) Web site at <http://wdol.gov/>.

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND WAGE RATE {Standard Form 1444 (SF 1444)}

### Conformance Process:

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C) (vi)} When multiple wage determinations are included in a contract, a separate SF 1444

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should be prepared for each wage determination to which a class(es) is to be conformed.

The process for preparing a conformance request is as follows:

- 1) When preparing the bid, the contractor identifies the need for a conformed occupation(s) and computes a proposed rate(s).
- 2) After contract award, the contractor prepares a written report listing in order proposed classification title(s), a Federal grade equivalency (FGE) for each proposed classification(s), job description(s), and rationale for proposed wage rate(s), including information regarding the agreement or disagreement of the authorized representative of the employees involved, or where there is no authorized representative, the employees themselves. This report should be submitted to the contracting officer no later than 30 days after such unlisted class(es) of employees performs any contract work.
- 3) The contracting officer reviews the proposed action and promptly submits a report of the action, together with the agency's recommendations and pertinent information including the position of the contractor and the employees, to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, for review. (See section 4.6(b)(2) of Regulations 29 CFR Part 4).
- 4) Within 30 days of receipt, the Wage and Hour Division approves, modifies, or disapproves the action via transmittal to the agency contracting officer, or notifies the contracting officer that additional time will be required to process the request.
- 5) The contracting officer transmits the Wage and Hour decision to the contractor.
- 6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF 1444 or bond paper.

When preparing a conformance request, the "Service Contract Act Directory of Occupations" (the Directory) should be used to compare job definitions to insure that duties requested are not performed by a classification already listed in the wage determination. Remember, it is not the job title, but the required tasks that determine whether a class is included in an established wage determination. Conformances may not be used to artificially split, combine, or subdivide classifications listed in the wage determination.

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REGISTER OF WAGE DETERMINATION UNDER THE SERVICE CONTRACT ACT By direction of the Secretary of Labor		U.S. DEPARTMENT OF LABOR EMPLOYMENT STANDARDS ADMINISTRATION WAGE AND HOUR DIVISION WASHINGTON D.C. 20210	
Diane Koplewski Director	Division of Wage Determinations		Wage Determination No.: CBA-2011-4159 Revision No.: 0 Date Of Last Revision: 2/25/2011

State:

Area:

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Employed on George C. Marshall Space Flight Center  
MSFC, AL 35812 contract for Code II: Marshall Engineering Technicians and Trades  
Support (METTS) Services.

Collective Bargaining Agreement between contractor: InfoPro Corporation  
and union: Building and Trades Council effective 5/16/2009 through 5/16/2012.

In accordance with Section 2(a) and 4(c) of the Service Contract Act, as amended,  
employees employed by the contractor(s) in performing services covered by  
the Collective Bargaining Agreement(s) are to be paid wage rates and fringe benefits  
set forth in the current collective bargaining agreement and modified extension  
agreement(s).

## **Attachment J-20**

### **NASA MSFC Safety & Mission Assurance Surveillance Plan Responsibilities and Requirements**

#### 1. General:

This document sets forth the Quality Assurance (QA) functions to be performed for NASA Marshall Space Flight Center (MSFC) on Contract NNM08AA20C in accordance with the scope of the contract Performance Work Statement (PWS).

This surveillance plan is written to perform surveillance activities at both the contract level and task level based on the products and services provided to MSFC NASA. This plan is tailored based on FAR Regulation Part 46, NPR 8735.2, "Management of Government Quality Assurance Functions for NASA Contracts" paragraph section Chapter 2, and MPR 5000.1, "Purchasing", Section 3.3. The plan shall be used for work performed on MSFC NASA space flight products; qualification articles for space flight hardware; associated Ground Support Equipment (GSE), designated special test equipment, development hardware as specified by applicable project/quality plans, engineering technical support, and other NASA/NASA Prime Contractor customer requested quality assurance support as specified in Customer Agreements with associated MSFC/customer quality assurance requirements, or direct Requests for Proposals (RFQ's) or subsequent contracts with documented NASA/delegated Agency quality assurance requirements. It also is written to support quality assurance activities for other customers as allowed by contract.

QD11, Quality Assurance Branch, and supporting inspection personnel from the S&MA Mission Services Contractor are responsible for performing Government inspection and test monitoring as specified in this document and the contract.

Detailed surveillance requirements are contained below in this document consisting of 2 parts, quality assurance surveillance at the contract level and task level. Both of which include support from the contractor in the functional performance of this plan.

- Part A covers the general surveillance of the Contractors quality management system and its performance.
- Part B covers the NASA MSFC quality assurance oversight activities performed for MSFC NASA, other NASA Centers, and NASA Prime Contractors work requested in the performance of NASA specific work under the specified Task Agreement.

This plan is being submitted to the Contractor to enable them to structure their quality planning requirements associated with procured manufacturing, integration, and technical support activities.

**Part A**

**General NASA Contract Quality Management System Monitoring and Surveillance**

The following is the surveillance process that the S&MA Representative (SMAR) will perform to assure that the contractor has performed under the contracted quality management system process required by the contract, and/or specified by COTR, and in support of the contractual monitoring process. Any specific quality requirements required by a task agreement will be submitted through the task agreement process by the program/project quality engineering representative.

2a. The MSFC NASA MSFC S&MA Contract Lead Directorate Representative shall be designated as the "S&MA Representative" (SMAR). Primary and Alternate personnel contact information:

**Primary:**

QD11/Chana Johnson  
Phone: 256-544-7882  
Fax: 256-544-4155  
Alt Phone: 256-651-5530  
Email: [chana.d.johnson@nasa.gov](mailto:chana.d.johnson@nasa.gov)  
Location: Building 4203/Room 2152

**Alternate:**

QD11/Pat Moore-Hartley  
Phone: 256-544-4258  
Fax:  
Alt Phone : 256-651-1365  
Email: [patricia.l.moore-hartley@nasa.gov](mailto:patricia.l.moore-hartley@nasa.gov)  
Location: Building 4666/353A

1. The contractor shall submit a report monthly to the SMAR of all quality sensitive nonconformities initiated by the contractor. The report shall state whether they are minor or major nonconformances. The report shall list all opened, in-process, and closed nonconformance's and corrective/preventative actions taken. The nonconformance report listing section shall contain the document number, part/assembly number and/or system requirement, reason for the nonconformance, did NASA find the nonconformance, resolution, date of initiation, and if closed the date of closure. The corrective action listing section shall contain the document number, the related nonconformance, the root cause of the nonconformity, the required corrective actions, and the results of actions taken to insure they were effective.
2. The SMAR shall review the training records of the contractor every 6 months to review the competency maintenance of personnel that affect deliverable products and technical support.
3. The SMAR shall review the internal audit reports every 6 months to review the effective implementation and maintenance of the contractor's quality management system.
4. The SMAR shall review the contractor management review records to assess the continuing suitability, adequacy, and effectiveness of the contractor's management review process associated with the overall implemented quality management system.

**Part B Task Agreement Specific**

**B1. Fabrication/Integration Task Order - NASA, NASA Prime Contractor, NASA Subcontractor Inspection and Validation Support Process Requirements**

1. General, the SMAR will be responsible for overall contractor compliancy evaluation qualification and maintenance of the contractor's contract and task specified quality management system processes as specified in WBS 2.4. For the Fabrication/Integration Task Agreement, Quality assurance activities noted within this document are defined as quality sensitive (See Section 3). All other activities not to be verified by the MSFC NASA Safety and Mission Assurance Directorate are considered non-quality sensitive and will be performed and accepted by the requesting organization through the Contracting Officer Technical Representative (COTR).

2. Program/Project Quality Representatives as specified herein will be either NASA and/or authorized Government Agency/Quality Assurance Support Contractor personnel.

3. Definitions:

a. Non-Quality Sensitive. A term used to identify equipment, hardware, software, or material not directly related to flight systems (e.g., mock-up, development hardware and software, industrial machinery, laboratory equipment). Hardware or software procured for development activities is non-quality sensitive unless the data resulting from development activities will be used in the "justification for qualification" of flight hardware, software, or flight-associated hardware. These items are inspected and test verified by the Process Operator (PO) or Testing Organization (TO), not by the NASA MSFC Safety and Mission Assurance Directorate. (MPR 8730.1)

b. Quality Sensitive. A term used to identify inspection and test verification by the Safety and Mission Assurance Directorate for flight hardware, flight software, and flight-associated ground support equipment and special test equipment; deliverable products that are to be assembled into a launch vehicle and associated equipment for testing, handling, launching, servicing, and maintaining a vehicle in space; qualification and re-qualification hardware; and hardware or software procured for development activities when the data resulting from development activities will be used in the "justification for qualification" of flight hardware, software, or flight-associated hardware. Hardware to be used in a hazardous operation may also be designated as quality sensitive by the responsible organization. (MPR 8730.1)

4. References:

a. NASA standards can be found at the following Internet link:  
<https://standards.nasa.gov/documents/nasa>

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b. MSFC Quality Management System documents referenced in this document (NPR 8735.2; MPR 8730.1, "Inspection and Testing"; MPR 8730.3, "Control of Nonconforming Product"; MWI 5330.1, "Evaluation/Audits of Contractors, Suppliers, and Vendors; QD-QA-015, "Special Process Audits") can be found at the following Internet link: <http://midl.msfc.nasa.gov/> using MSFC intranet.

c. METTS (QC-02B) - METTS Quality Requirements, Quality Sensitive or latest revision.

d. METTS (QC-03B) - METTS Quality Requirements, Non-Quality Sensitive or latest revision.

5. Program/Project Quality Representatives shall submit all Government Mandatory Inspection Points (GMIP's), including the use of proposed contractor default quality requirements as noted in section 4 of this document, to the responsible planning personnel designated by the COTR, documented and signed by the Program/Project Quality Representative, as part of the work request process for all applicable contractor quality sensitive in-process product processing. MSFC NASA Mandatory Inspection Points to be added to all applicable work authorizing documents to be performed under this plan for in-process work and testing when transferred to NASA are enclosed within this section.

6. The QD11, Quality Assurance Branch will have responsibilities for the performance of surveillance activities for NASA MSFC including the verification of Government & NASA Mandatory Inspection Points, based upon approved quality planning requirements, and the final acceptance of deliverable products as specified herein. QD11 S&MA Mission Service Support Contractor personnel may be utilized to perform inspections on hardware produced under this contract but will not be allowed to make final product acceptance on the DD250.

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Quality Assurance Team Representative Contact Information:

	Manufacturing	Mfg Alternate	Labs
Lead	QD11 James Lamb	QD11 Ron Cantrell	QD11 Chana Johnson
Phone	256-544-7534	256-544-7394	256-544-7882
Fax	256-544-3241	256-544-3241	256-544-4155
e-mail	james.w.lamb@nasa.gov	ron.cantrell@nasa.gov	chana.d.johnson@nasa.gov
Cell	256-361-6664	256-604-9378	256-651-5530
Location	4705/A110C	4705/A111B	4203/2512

The QD11 Quality Assurance Branch and/or the assigned S&MA Mission Services Contractor inspectors as specified by NASA will perform contractor Government Mandatory Inspection Points (GMIP) & NASA Mandatory Inspection Points (NMIP) inspection processing. S&MA will assure that inspection and test monitoring personnel including their S&MA Mission Services Contractor are certified or qualified to perform the special process activities in accordance with the standards and specifications documented in contract section 2.4.

The following NASA Mandatory Inspection Points (NMIP) shall be placed on all quality sensitive work orders that will require transfer to NASA for processing:

1. Leak/proof testing using hydrostatic/gaseous pressure methods
2. Crane or forklift moves of PCH classified hardware (hand carries are not included)
3. In-process environmental testing
4. Nondestructive Evaluation (NDE), if not performed by the METTS contractor NDE personnel
5. Electrical/functional testing and bonding checks

All additional inspection and NASA processing mandatory inspection points required by Program/Project Quality Representatives or the QD11 Quality Assurance Branch shall be requested through the SMAR through to the COTR to evaluate the impact on contract delivery and/or inclusion into this plan as a GMIP. Minor changes to mandatory inspection points such as spelling, grammar, and changes that do not impact the delivery of the product and would not require configuration changes to the product, can be updated without COTR concurrence. GMIPs shall also be implemented by the assigned project S&MA Lead or Quality Engineer when deemed appropriate during the normal processing of specific Mechanical Fabrication Requests (MSFC Form 3751). The contractor shall route informational copies of orders containing GMIP and NMIP hold points to the QD11 Quality Assurance Branch representatives prior to or concurrent with release for manufacture. QD11 Quality Assurance Branch representatives shall review for proper GMIP & NMIP sequencing in the workflow.

GMIP processing nonconformances. Any product nonconformances found by the QD11 Quality Assurance Branch, except during acceptance testing, will require the contractor to initiate his nonconformance system to resolve the nonconformity(ies) found. The contractor shall document that NASA found the nonconformity. For all test related

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anomalies/failures, the QD11 Quality Assurance Branch shall initiate a NASA MSFC Test Discrepancy Record (TDR) and if necessary a Discrepancy Record (DR) as specified in MPR 8730.3.

The QD11 Quality Assurance Branch will be performing MSFC Organizational Instruction Process Audits to the requirements of QD-QA-015. The Quality Assurance Branch (QD11) and/or including their Mission Service Support Contractor personnel will be responsible to perform these audits. Process audits performed in conjunction with quality assurance inspection and monitoring activities shall be performed directly on a non-interference basis. Any nonconformance documentation generated by the audit process shall be processed as a contractor customer complaint process using as applicable their nonconformance and/or corrective/preventative action system process.

The QD11 Quality Assurance Branch, Government personnel (who may be supported by the Mission Services Support Contractor personnel who are limited to the review of the hardware and Acceptance Data Package (ADP)), shall perform final Government acceptance for all quality sensitive end item deliverables submitted under this contract by signing the DD250. Acceptance shall be made as specified in Section E of the contract with the required ADP. Any nonconformance found by NASA during final acceptance will be documented on a NASA MSFC nonconformance report. The contractor shall respond to the NASA nonconformance report as to its validity. If they accept the nonconformance as an issue with final delivery, they will use their quality management system to resolve the nonconformance and resubmit the product to NASA for continued processing. If the contractor does not consider the NASA nonconformance report as valid, they shall document it using their corrective action process back through the COTR to NASA.

The SMAR, Program/Project Quality Representatives, and QD11 personnel will all be available to provide technical guidance and assistance to assure full implementation of NASA Contractual QA requirements.

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Supplement for Component Refurbishment Shop and/or Calibration Laboratory Primary POC

Chana Johnson/QD11  
256-544-7882 office  
256-651-5530 cell  
chana.d.johnson@nasa.gov

Alternate: Ron Cantrell  
256-544-7394 office  
256-604-9378 cell  
ron.cantrell@nasa.gov

Quality Assurance Branch and Mission Services Contractor personnel shall monitor all contractual requirements associated with Task Order Requirements (TOR) for the Calibration Laboratory and the Valve/Component Shop, and perform periodic informal surveillance audits per QD-QA-015. Reports shall be forwarded on MSFC Form 4438 to the COTR and the contractor's Quality Assurance Manager. Quality Assurance personnel shall review associated Data Requirement Description submittals, MSFC or NASA audit or assessment findings, and government contract management and customer feedback to determine an area of importance to perform a surveillance audit. As part of the surveillance audits, Quality Assurance personnel shall select an area of importance, or, if no areas are identified, shall randomly select processes to review associated with Valve and Component Refurbishment Shop or Calibration Laboratory services. This includes but is not limited to compliance with approved procedures, personnel certifications, documentation and disposition of nonconformances, customer complaints, procurement controls and records maintenance, and other controls as deemed appropriate.

Valves, components, instrumentation and tools serviced by the Valve Lab and Calibration Lab effect design decisions, flight safety, personnel safety, and safety of in-house operations; as such these operations are defined as critical and complex work per NPD 8730.5, "NASA Quality Assurance Program Policy".

The contractor shall:

- Provide Deficiency Corrective and Preventive Action Report in accordance with DRD No. 1163QE-02.
- Notify the COTR and QD11 quality contact for the facility of issues or concerns requiring government assistance to resolve, such as interface issues with other contractors, Centers or Agencies.
- Notify the QD11 quality contact for the facility for service of flight or qualification hardware in advance of processing.